

## MULTIPLE METASTASES GESTATIONAL CHORIOCARCINOMA - A CASE REPORT

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**Introduction.** Gestational choriocarcinoma (GC) is a malignant condition that develops from trophoblastic cells originating from a previous pregnancy, eutopic or ectopic. Metastatic choriocarcinoma is often diagnosed in the absence of a primary uterine or ovarian tumor, presumably because the latter has undergone complete necrosis. GC rapidly metastasizes spreading to lungs, brain, bones, bone marrow, liver, and other organs, but responds well to chemotherapy.

**Material and methods.** We present the case of a 25-year-old woman with critical evolution after being diagnosed with choriocarcinoma following a complete hydatidiform mole pregnancy. Even though the patient initially received proper treatment, due to poor follow-up compliance, the condition led to invasive metastases. When it spread to the musculoskeletal system and other organs, doctors were able to link symptoms to the choriocarcinoma diagnosis and chemotherapy was initiated. Unfortunately, the patient succumbed due to intracranial hemorrhage.

**Discussions.** GC is a highly and fast invasive malignancy, with rapidly growing tumors. It is often associated with hemorrhage, ischemic necrosis, and secondary inflammation. Often, by the time the tumor is discovered, X-rays of the chest and bones already show metastatic lesions. Chemotherapy success depends on early detection and diagnosis of tumors after pregnancy.

**Conclusions.** Even though the initial diagnosis and treatment should have led to a favorable outcome, the patient's poor compliance was followed by rapid progression of the disease and, finally, exitus.

**Keywords:** gestational choriocarcinoma, metastases, chemotherapy

## FEMALE FERTILITY PRESERVATION IN PATIENTS WITH MUSCULOSKELETAL CANCER

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**Introduction.** Besides the improvement of the survival rate in young patients with musculoskeletal cancer, we should always consider that infertility and premature menopause due to treatment might dramatically affect their quality of life.

**Material and methods.** This article is a review of literature.

**Results.** After puberty, the first option should be ovarian controlled hyperstimulation (COS) resulting in oocytes that are consequently fertilized using FIV or ICSI and the cryopreservation of the embryos. If the patient does not have a partner at that moment, the next method is the vitrification of the oocytes resulting from the COS.

The disadvantages of using COS are the need to postpone the radio and chemotherapy for at least 2-3 weeks and high oestradiol levels, but there are very few hormone dependent musculoskeletal tumors that may be affected. Ovarian tissue cryopreservation (OTC), with ovarian tissue transplantation (OTT) is the only method used if the patient is before puberty, plus, this technique allows patients to spontaneously conceive, if they do not have any other fertility pathology, but this freezing/thawing procedure may have success or not. There is currently no evidence to suggest that OTT causes reseeding of the original cancer, and the restoring of the ovarian endocrine function was reported in about 95% of the cases.

**Conclusions.** The success of fertility preservation techniques is related to the cryopreservation methods used and the age of the patient. The reproductive cells with the best survival are the embryos, the next are oocytes, or ovarian tissue may be cryopreserved. For best outcomes, the fertility preservation must be pluridisciplinary discussed, involving the ART specialist gynecologist, the oncologist and the surgeon of the musculoskeletal tumor.

**Keywords:** fertility preservation, musculoskeletal cancer, ovarian cryopreservation, oocyte cryopreservation, embryo cryopreservation

## OUT OF BORDERS FOR RADICAL GYNECOLOGIC SURGERY

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Advances in several medical disciplines have resulted in greatly improved outcome and reduced morbidity and mortality in the management of complex gynecologic tumors. Early reports of central pelvic exenteration were discouraging and associated with high mortality (28%) and major complications (100%). Preoperative medical assessment, expert anesthesia, and postoperative intensive care have reduced perioperative mortality to less than 5%.

For patients with recurrent cervical and endometrial cancer, who already had surgery, and for a minority of primary or recurrent sarcomas without distant metastases, the contemporaneous surgery offers a chance by bone extended resections.

Keywords: gynecologic cancer, uterine sarcoma, endometrial cancer, cervical cancer

## MANAGEMENT OF BREAST CANCER PATIENTS AND BONE METASTASES AT THE TIME OF DIAGNOSIS AND DURING ONCOLOGICAL MONITORING

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**Introduction:** Despite the success of early detection of mammary neoplasms and the application of an aggressive therapy, this pathology continues to be a clinical problem. Mortality associated with breast cancer is directly proportional to cell invasion and the presence of metastases. Tumor cells within a breast tumor may be present as secondary determinations and present a spine and bone-related tropism.

**Material and method:** Analysis of articles published in the literature to observe the association between the presence of bone metastases at the time of diagnosis of breast cancer and during the oncological monitoring period according to staging.

**Results:** Approximately 15% of the patients with stage I - III breast cancer have bone metastases during the first 60 months after surgery. Approximately 50% of the patients who had metastases presented as a bone location in oncological monitoring. The most common bone metastases are spine, ribs, pelvis, and long bones.

**Conclusions:** Breast neoplasm has a distinct metastatic pattern with bone skeleton as the predominant site. Approximately 65 to 75% of the patients with invasive breast cancer develop bone metastases. For this reason, oncological monitoring should take into account the early identification of these secondary locations.

**Keywords:** breast cancer, bone metastases, osteoblasts, osteoclasts, dormant mechanism

## THERAPEUTIC CONDUCT IN SOFT-TISSUE TUMORS DIAGNOSED IN THE PREGNANT PATIENT

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**Introduction.** Soft tissue tumors are a rare pathology encountered in the pregnant patient. Considering the patient's potential vital risk, the concomitant evolution of pregnancy and the possible infertility acquired after treatment, the therapeutic conduct of these tumors is a challenge to current medical practice.

**Material and method.** The paper aims to present certain cases of soft-tissue tumors diagnosed in pregnant women as well as a retrospective analysis of literature.

**Results.** The diagnosis of certainty was significantly delayed in the case of pregnant patients. The treatment plan was complex and had to take into account the type and the location of the primary tumor, growth rate, associated symptom, age of pregnancy, as well as minimize the fetal toxic effects.

**Conclusions.** The identification of a soft-tissue tumor during pregnancy is associated with limited diagnostic methods. A multidisciplinary team should establish the therapeutic approach for soft-tissue tumors diagnosed in the pregnant patient. The therapeutic approach should be individualized in each case in order to achieve a balance between tumor treatment, pregnancy outcome, and subsequent reproductive capacity of the patient.

**Keywords:** soft-tissue tumor, desmoid tumor, sarcoma, pregnancy, fertility

## MULTIDISCIPLINARY TREATMENT OF A VOLUMINOUS PELVIC TUMOR WITH GLUTEAL DEVELOPMENT - CASE PRESENTATION

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The aim of the paper was to present the case of a 64-year-old patient with no significant pathological history, accusing the significant increase in volume of her left buttock, accompanied by sciatic compression and pelvic pain phenomena. Clinical evaluation revealed a large, left gluteal tumor, of regular shape and medium consistency, painless at palpation, causing hyperesthesia in the sciatic territory by compression. The IRM with contrast enhancement described a heterogeneous tumor, measuring about 25 centimeters in diameter, isointense in the T1 and T2 signals, with hypointense areas and imagistic aspect suggesting differential diagnosis between liposarcoma and fibrolipoma. From the imagistic point of view, the origin of the tumor was pelvic, with a threadlike tract in the sciatic hole and development in the gluteal region for the most part.

Surgery was decided on a multidisciplinary team including a gynecologist, orthopaedist, and general surgeon, using a double approach through laparotomy and gluteal incision. The first operative step consisted in laparotomy with pelvic tumor dissection at the level of the iliac vessels and its prolongation at the level of the sciatic hole. The large gluteal incision was used during the second step in order to mobilize the tumor form between the gluteal fibers. Subsequent thorough hemostasis was performed with postoperative aspect inspection through both approaches. The postoperative evolution was favorable without immediate or late complications. The histopathological result was fibrolipoma, with good prognosis for the patient. In conclusion, the multidisciplinary surgical approach in this patient presenting with a pelvic tumor with transischial gluteal development was the optimal choice, which led to a favorable outcome in a complex case. Keywords: voluminous gluteal tumor, fibrolipoma, multidisciplinary team

## STATISTICALLY BASED SURVIVAL RATE ESTIMATION IN PATIENTS WITH SOFT TISSUE TUMORS

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**Introduction.** Although most soft tissue tumors are benign, with a high healing rate after surgical excision, there is a variety of malignant tumors with differences in progression and prognosis. The study aims to assess the survival rate in patients diagnosed with this pathology, based on the patient's characteristics (age, gender, race), as well as the tumor's (histological type, differentiation degree, location and size).

**Materials and methods.** The retrospective study included a group of 103 patients diagnosed in our department during 2010 and 2017. Considering the high healing rate of benign tumors, only the group of neoplastic patients (45 cases) was involved in the survival rate estimation, assessing tumor characteristics and individual comorbidities.

Within this lot, we emphasized a predominance of neoplasm in patients aged over 50 years (32 cases), men (29 cases), and localization of the neoplasm in the thigh (23 cases). The predominant histopathological type, liposarcoma, was diagnosed in 67% of the cases, with dimensions over 6 cm and with local extension.

**Results.** There have been significant variations in mortality between the different histological subtypes (liposarcoma vs. synovial sarcoma). Local recurrences were shown in 18 cases of liposarcoma in the first 2 years after the surgical excision, with an increased aggressiveness of this neoplasm in men over 50 years. 12 cases developed distant metastasis, and, until the end of the study, 7 deaths were reported in 3 cases involving associated comorbidities.

**Conclusions.** The five-year survival is inversely proportional to the extent of the tumor and the local invasion, as well as to the age of the patient. It is difficult to appreciate an overall survival rate in the context of a heterogeneous group of tumors so it must be evaluated for every histological subtype taking into account the patient's particularities.

**Keywords:** survival, sarcoma, mortality, prognosis

## PERIOPERATIVE PAIN MANAGEMENT IN PRIMARY BONE TUMORS

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**Introduction.** The increasing number of tumor prosthesis in the last decade shows the advance in musculoskeletal oncology. Limb sparing surgery nowadays has to be the focus in surgery, maintaining the patient's quality of life.

Prognosis depends on the histological type of tumor, size, and local extension. Pain is present in almost any cases of bone tumors and can vary in intensity and character. Being the leading symptom is strongly correlated to the quality of life.

The purpose of this study was to evaluate pain in patients with primary bone sarcomas before and after surgery.

**Material and methods.** 11 patients were involved in this study over a period of 4 years (2014-2017) from the Orthopedics and Traumatology Department in the University Emergency Hospital in Bucharest. Tumor resection and reconstruction with modular prosthesis was performed in 4 cases, and tumor resection was necessary in 3 cases and amputation in 4 cases. Pain was evaluated before and after surgery using the Visual Analog Scale (VAS). Early postoperative pain control was achieved with epidural catheter, followed by opioid therapy, NSAIDs and Paracetamol in the early stages of mobilization.

**Results.** Surface sarcomas and tumors close to the periosteum, or periosteal involvement has shown a localized and increased pain. Multimodal-analgesia was used for pain management. Within the first 48 hours, analgesia was performed with an epidural catheter by continuous infusion of ropivacaine 0.2% and fentanyl 2mcg/ ml at a rate ranging between 3-6 ml/ h, obtaining a VAS score between 0 and 3.

**Conclusions.** Perioperative pain management has to be individualized to the localization and local soft tissue involvement of the tumor. In late stages of sarcomas or local recurrence, conventional analgesics can be inefficient. Early diagnosis and surgical removal of these tumors is the most important objective for a good prognosis.

**Keywords:** pain, bone sarcomas, prognosis

## INDICATION OF AMPUTATION AFTER TUMORAL ARTHROPLASTY

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**Introduction.** After a time when amputation was the only treatment option for musculoskeletal malignancies, a major breakthrough was the tumoral arthroplasty with limb preservation.

**Material and method.** The study included a group of 28 patients, of whom 20 had pelvic limb tumor formation. Malignant bone tumors were present in 18 patients and benign tumors in 10 patients. The most commonly encountered was osteosarcoma in 12 patients, Ewing sarcoma in 4 patients and giant cell tumor in 3 patients. Patient follow-up was conducted within 4 years (with an average of 3-5 years).

**Results.** 5 of our patients developed pulmonary metastases 8 months after surgery and, for 4 of the patients, pulmonary determinations were extirpated without subsequent relapse. The survival rate was 75% at the last follow-up (6 of 12 patients with osteosarcoma, 1 of 4 patients with Ewing's sarcoma has died), and 32% had local tumor recurrence. The infection remains an inherent danger by using implants in immunosuppressed patients. 18% of the patients had amputations secondary to long-term complications involving the following prosthesis causes: vascular compromise, aseptic loosening, periprosthetic fractures, and metallosis. Sarcoma was associated with a higher infection rate. Radiotherapy and chemotherapy (not in combination) were statistically associated with an increased infection. Debridement with retention of the implant has reached a remission of the infection rate of 70%, 62% for two-step treatment to 100% in the case of amputations.

**Conclusions.** Regardless of the stage of the tumor, amputation has a narrower indication nowadays, the goal being the retention of the limb and reconstruction.

The amputation post-tumoral arthroplasty is of a primary intention in the case of aggressive local recurrences and massive infections. *Staphylococcus aureus* remains the bacterium with the highest incidence of infection complications.

**Keywords:** tumoral arthroplasty, post-intervention amputation, local recurrence

## PROGNOSIS AND SURVIVABILITY IN SURGICALLY TREATED METASTASIS OF THE LONG BONES

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**Aim:** To assess the clinical results after osteosynthesis with locked intramedullary nail in metastasis of the long bones.

**Material and methods.** We designed a prospective study in which we included all the patients with metastasis of the long bones admitted and surgically treated in our department between 2013 and 2015. Data for 64 were available at the final check-up. Our cohort totalized a number of 69 fractures (2 long bones required surgical treatment in 5 patients). The mean follow-up for survivors was 37 months (limits: 18-49 months).

The primary tumor was known in 51 patients (79,69%). For the remaining 13 cases (20,31%), the primary tumor was not known and the pathological fracture was the first sign of the malignant disease. In the last group, the tumor could be identified by imagistic methods in 6 cases, while in other 3 cases, a biopsy and histological examination (which were performed in all the remaining 7 cases) determined the source organ. Clinical and radiological check-ups were performed at every 3 months in the first year and at every 6 months after that.

**Results.** Pain amelioration and mobilization of the involved limb were achieved in all the cases. In 3 patients, the osteosynthesis could not compensate the progressive bone loss and the permanent use of an external orthosis was mandatory. The survival rate was 82,81% at 6 months and 67,19% at 12 months.

**Conclusions.** All patients could be mobilized. Two thirds of the patients will survive more than a year. The goals of osteosynthesis are the same, regardless the location of the fracture and implant used: pain amelioration, stability for immediate full weight bearing, durability for patient's life expectancy.

**Keywords:** bone metastasis, intramedullary nail, long bones

## FEMORAL GIANT CELL TUMOR IN A PATIENT WITH SURGICALLY TREATED FEMORAL CONDYLE FRACTURE: MISDIAGNOSIS OR COINCIDENCE?

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**Introduction.** Giant-cell tumor of bone (GCTB) is a benign tumor with an unpredictable evolution, representing 4-5% of all primary bone tumors and 15% of benign bone tumors usually affecting 20-45 years old adults. The predilect location is the distal femur, proximal tibia, and distal radius.

**Case presentation.** We report the case of a 31-year-old male, regardless of medical history, admitted in the emergency department (ED) for significant pain and functional impairment of the right knee, after suffering a traumatic event. Clinical examination and imaging tests established the diagnosis of lateral femoral condyle fracture.

Therefore, osteosynthesis with 4 screws was performed. Postoperative evolution was uneventful until one year later when the patient presented to the ED for pain and inflammatory aspect of the right knee, but with no history of trauma during this time. The imagistic exams of the right knee (X-ray, magnetic resonance imaging and scintigraphy) detected a tumor of the lateral femoral condyle that also affected the osteosynthesis material. Thus, the removal of screws and histopathological exam were performed, the latter establishing the diagnosis of GCTB. Taking into consideration radiological and histological aspects of the tumor and relating them to the clinical findings, the GCTB was classified in stage III Enneking. The patient underwent surgery, segmental resection of the tumor in oncological limits and arthroplasty with modular tumoral prosthesis was performed. Postoperative results at 6 and 12 months according to Musculoskeletal Tumor Society Scoring System were very good.

The key feature of this case consists of post-osteosynthesis appearance of the GCTB given the fact that only 3 cases of GCTB affecting the screw site were reported in literature.

**Keywords:** giant-cell tumor of bone, lateral femoral condyle fracture, modular tumoral prosthesis

## THE PROGNOSTIC ROLE OF IMMUNOHISTOCHEMISTRY IN PRIMARY BONE TUMORS

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In the last decades, immunohistochemistry (IHC) has shown an important role in tumor differential diagnosis and has proven its prognostic role.

Due to the various histological subtypes of primary malignant bone tumors, its role will be more important in the future. Based on recent studies, tumor growth, cell mobility, and metastases strongly correlate to the survival of these patients. An increased number of specific IHC markers have been used to determine the aggressiveness of the metastatic capacity of these tumors in enhancing early specific oncological therapies.

This study presents 15 cases of primary malignant bone tumors, over a period of 4 years (2014-2018), from the Orthopedics and Traumatology Department of the University Emergency Hospital in Bucharest, where we evaluated the proliferation index using Ki67 IHC marker, tissue remodeling, the presence of necrosis in osteosarcoma cases in which chemotherapy was applied, and the aspect of the cytoskeleton with vimentin. Besides the histological aspect, we evaluated the tumor site, invasion and extension to the surrounding tissues (Computer Tomography, Magnetic Resonance) and vascularization with angiography, all these properties having an important prognostic role.

Our findings were similar to other research papers in literature; showing that a fast growing and high proliferation index with increased cell mobility has a worse prognosis. Pulmonary metastases occurred in a relative short time in high-grade osteosarcomas, despite the chemotherapy, and multiple metastases were present at 6 months in a dedifferentiated chondrosarcoma case, in which the high-grade sarcoma was an osteosarcoma.

Based on the literature, we also think that some specific markers might have multiple roles regarding the tumor growth local invasion and metastasis.

Keywords: immunohistochemistry, bone sarcomas, prognostic

## MODULAR RECONSTRUCTION SYSTEMS – FINAL SOLUTION FOR CRITICAL BONE DEFECTS TREATMENT

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**Introduction.** The management of critical bone defects has experienced an unprecedented improvement in the last few decades. A good primary mechanical stability and versatility of the modular reconstruction systems allowed the conversion to universal setups and the expansion of indication. The progression and reliability of the reconstruction possibilities available nowadays are outlined using the experience of our department.

**Material and method.** A retrospective review of critical bone defect cases and the reconstruction management using endoprosthetic systems is presented. Ten reconstruction surgeries performed in the last 18 months in our department were observed. The patients were 3 males and 7 females with a mean age of 45.3 (range 19 to 75). Modular systems were used for the reconstruction of bone defects subsequent to resections of benign or malignant musculoskeletal tumors (76%) and to non-neoplastic conditions (24%).

**Results.** On the latest follow-up, all the patients were alive, with one case of tumoral recurrence. No aseptic loosening, soft tissue or structural failure were recorded following surgery, with one case under treatment for infection after it required an open procedure for a prosthetic hip dislocation. The early functional results were adequate in all cases, with good secondary stability and satisfactory quality of life.

**Conclusion.** The evolution of endoprosthetic reconstruction surgery has improved the prognosis for many patients diagnosed with critical bone defects.

Continuous advances in implant design, fixation, and soft tissue attachment combined with the improvement of surgical techniques will ensure a bright future for this type of procedures.

**Keywords:** reconstruction, bone defect, modular system

## PIGMENTED VILLONODULAR SYNOVITIS OF THE POPLITEAL FOSSA – CASE REPORT

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Pigmented villonodular synovitis is a benign proliferative condition that causes the synovium of the joints and tendons to thicken and overgrow. The causes have not been completely discovered, with trauma and repetitive inflammation being the most incriminated. Genetic aberrations have been reported in most cases and could suggest a neoplastic origin of the disease. It appears in 2 forms: localized or diffuse. Although it can affect all joints, the most common location is the knee. The treatment options include anti-inflammatory medication, surgical removal (open or arthroscopic) and radiotherapy (mixed results).

We present the case of a 31-year-old male who came to our Clinic with pain and tumefaction of the right popliteal fossa. From the patient's medical history, it resulted that he had developed a tumoral growth in the popliteal fossa 20 months before, which was removed. After extensive investigations (X-ray, CT, and MRI), a biopsy was performed. The result was pigmented villonodular synovitis. The proliferation was removed for the second time. The immediate post-surgery evolution was good and the patient is scheduled for periodic follow-ups.

Although the proliferation was removed entirely, studies show that this disease has a high chance of recurrence (46% for the diffuse form). Also, in time, repeated excisions can force the surgeon to choose more radical options (joint reconstruction or even amputation).

Keywords: synovium, proliferation, surgery, recurrence

## CONGENITAL FIBROSARCOMA – CASE PRESENTATION

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**Introduction.** Congenital fibrosarcoma is a rare soft tissue neoplasm, distal extremities being more commonly involved. This tumor has a rapid growth and extensive local invasion, but metastasis is rare. It is usually observed in children younger than two years old and is present at birth in up to 30% of the cases.

**Purpose.** Evaluation of the methods of diagnosis and treatment in a case of a newborn known from intrauterine life, with a large tumor of the right arm.

**Materials and methods.** We present the case of a 1-day-old patient, who was transferred from maternity in our clinics with the following diagnostics: large tumor of the right thoracic member, cardiac insufficiency, prematurity, severe respiratory distress. The tumor was visible at ultrasonography from intrauterine life, and the evolution was the increase in volume with necrosis areas and hair presence on its surface. After imagistic investigation, taking into account the tumoral extension with neurovascular involvement, without the possibility of a tumoral resection, but also the imminent danger of spontaneous rupture, we decided to perform a shoulder disarticulation without a biopsy in advance.

**Results.** Postoperative evolution and the treatment of the cardiac insufficiency were good under antibiotics. The histopathological results advocate for the diagnosis of congenital fibrosarcoma, also confirmed by immunohistochemical tests.

**Conclusions.** Soft tissue tumors are very rare and they need a multidisciplinary evaluation for the establishment of the right treatment. Imagistic and laboratory investigations can guide the diagnosis and the therapeutical conduct. The certainty diagnosis is established only after the histopathological results.

**Keywords:** fibrosarcoma, congenital, shoulder disarticulation

## RECONSTRUCTION IN MALIGNANT TUMORS OF THE CALF AFTER TUMORAL RESECTION IN CHILDREN

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**Purpose.** Evaluation of reconstructive procedures after oncologic resection of malignant bone tumors of the calf in children.

**Materials and methods.** The study contains 4 patients with ages between 5 and 18 years, 2 of the cases being diagnosed with osteosarcoma, respectively 2 with Ewing sarcoma of the tibia. In 3 of the cases, the surgical treatment consisted of en bloc tumoral resection and reconstruction with metal acrylic spacer and, in the 4<sup>th</sup> case, the tumoral resection was followed by endoprosthetic replacement. In all cases, the surgical treatment was preceded by biopsy and chemotherapy.

**Results.** In 3 of the patients we used a gastrocnemius flap and one patient needed a negative pressure dressing for 11 days after surgery. The follow-up varied between 8 and 17 months after surgery. The patient who underwent endoprosthetic replacement was immobilized in a mobile orthosis and partial weight bearing at 2 weeks PO.

The patient who underwent endoprosthetic replacement needed a surgical revision at 10 months PO consisting in the reinsertion of a locking screw of the patellar tendon fixation device. 2 of the presented cases are waiting for replacement of the metal acrylic spacer with a definitive reconstruction procedure, 1 case is proposed for amputation.

**Conclusions.** Malignant bone tumors of the calf in children represent a pathology with high complexity giving the possible complications that can occur, a redoubtable risk being implant loss due to lack of coverage. The discussion remains open regarding the right time for definitive surgical procedure with modular endoprosthesis in children, and other reconstructive techniques available in these cases.

**Keywords:** osteosarcoma, Ewing sarcoma, biopsy, reconstruction

## THE INDICATION OF RESECTION-RECONSTRUCTION WITH TUMOR PROSTHESIS FOR THE YOUNG PATIENT WITH OSTEOSARCOMA

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**Introduction.** The osteosarcoma represents the most frequently encountered primitive malignant bone tumor, representing 30% of the malignant bone tumors with an unpredictable evolution.

**Materials and methods.** A retrospective study realized over a period of 3 years (Jan. 2016-Jan. 2018), which included 6 patients diagnosed with osteosarcoma and treated through the reconstruction with tumor prosthesis technique in the Orthopaedics and Traumatology Clinic of the University Emergency Hospital in Bucharest.

**Results.** Of the total 6 patients, 5 were male and 1 was a female with ages between 20 and 61 years old, with an average of 30.6 years. The localization of the tumor was at the distal femur (3 cases) and at the proximal tibia (3 cases).

In 3 cases, the reattachment of the extensor apparatus of the knee to the prosthesis was needed, while for 3 of the cases, a musculocutaneous flap was created for the coverage of the implant.

All the 6 patients were monitored and had postoperative follow-ups at 3, 6 and 12 months by having clinical and imagistic evaluations in search of the eventual local recurrences or metastases in other tissues and organs. The postoperative evaluation of the function of the joint was realized with the Knee Society Score Questionnaire and recorded very good results (76-91) with an average of 82 points.

**Conclusions.** The short-term results of this study about the treatment of the knee osteosarcoma with modular prostheses show that this treatment has a low tumoral recurrence rate and restores the joint function.

**Keywords:** tumor prosthesis, osteosarcoma, resection-reconstruction

## SOFT TISSUE GIANT CELL TUMOR - INCIDENCE AND THERAPEUTIC RESULTS

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**Introduction.** Giant cell tumors of soft tissue (GCTs) have a relatively low incidence and their low prognosis is reserved to local relapses and distant metastases. This type of pathology usually affects adults and the elderly and it is localized in the extremities, most frequently in the thigh.

**Materials and methods.** GCT is a relatively low aggressive tumor; approximately 85% of the patients survive at least 5 years after diagnosis. The risk factors for low prognosis are old age, metastases at the time of diagnosis, local relapse. We conducted this study in the University Emergency Hospital, Bucharest for a period of 3 years, between 01.01.2015 and 01.01.2018, which included 20 patients with ages between 22 and 83 years, of whom 9 were women and 11 were men.

**Results.** Excision with safety margins was performed for all patients. During surgery, tissue samples from 6 different areas were sent for extemporaneous examination. After excision, the histopathological examination was performed and the diagnosis of GCT was established. Localized forms were described in 16 cases; diffuse forms were identified in 4 cases and loco-regional recurrences in 3 cases. Pre or postoperative adjuvant treatment was not applied in any of the cases.

**Conclusions.** GCT is a rare, potentially malignant pathology, in which case evolution is unfavorable. From the clinical and imaging point of view, it is difficult to establish this diagnosis due to the large variety of pathologies it can be mistaken for, making biopsy an essential step within the diagnostic algorithm. Election treatment is represented by local excision with safety margins.

**Keywords:** GCT, biopsy, surgical treatment

## SURGICAL TREATMENT OF GIANT-CELL TUMORS OF THE DISTAL EPIPHYSIS OF THE RADIUS

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**Introduction.** Giant-cell tumor of the bone is a benign tumor, but with high local aggressiveness, even with risk of remote metastasis.

**Material and methods.** We present the case of a 57-year-old woman, without significant pathological history, who, after clinical, imagistic and anatomopathological investigations, was diagnosed with giant cell tumor of the right distal radius. The patient underwent surgery and due to the size of the tumor and destruction of the surrounding cortical bone, segmental resection of the tumor in oncological limits was performed. The bone defect was filled with the proximal one third of the ipsilateral fibula, fixed to the remaining radius diaphysis with a plate and screws. Also, the autograft was stabilized to the proximal row of the carpal bones with 2 k-wires for 6 weeks. Postoperatively, clinical and X-ray check-ups were performed at 6, 12, 24 weeks and 1 year after surgery.

**Results.** According to Mayo functional assessment score, the results were good. At 1 year after surgery, the patient gained 85 points, representing a good functional outcome of the surgery. This way, the wrist joint mobility and the carpal cartilage were preserved, providing a barrier against distal migration of any remaining tumoral cells, as well.

**Conclusions.** It can be stated that in aggressive giant cell tumors located at the distal radius, the best therapeutic option is a segmental resection of the lesion followed by the replacement of the bone defect with a proximal fibular autograft. This method provides the best postoperative functional results with a lower risk of local recurrence and does not require microvascular surgery or access to a bone bank.

**Keywords:** giant cell tumor, segmental resection, fibular graft

## FEMUR METASTASIS SECONDARY TO A CARCINOMA OF THE UTERINE CERVIX (CASE STUDY)

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**Purpose.** The purpose of this study is to correlate the existence of a unique bone metastasis of the femur, secondary to a carcinoma of the uterine cervix, the treatment plan, and the recovery of the patient.

**Materials and method.** From previous studies, it is known that the prevalence of unique bone metastasis of the femur secondary to carcinoma of the uterine cervix is very low, in most cases the patients having multiple metastases or in other organs. The case presents a 40-year-old patient who had surgery 2 years before for a carcinoma of the uterine cervix. After the surgical treatment, the patient received chemotherapy and radiotherapy. Nowadays, the patient exhibits pain in the left hip. Following the clinical and paraclinical protocols, an incisional biopsy was made. The histopathologic result was metastasis from the uterine cervix squamous cell carcinoma. The surgical treatment consists of segmentary resection and total hip arthroplasty with tumor reconstruction prosthesis.

**Results.** After total hip arthroplasty with tumor reconstruction prosthesis, we were able to make a segmentary resection in oncological limits, with the complete excision of the metastasis, the patient being able to start the recovery the next day after the surgery.

**Conclusions.** As a surgical indication, the tumor prosthesis represents the best option in the segmentary resections of tumors, this allowing a reconstruction and an early recovery.

**Keywords:** metastasis, squamous cell carcinoma, tumor prosthesis

## SURGICAL OPTIONS IN PERIPROSTHETIC FRACTURES

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**Purpose.** The periprosthetic fractures are a more and more often encountered type of pathology, in which the main problem is the indication for surgery. The most important thing is the choice of the best therapeutic option in order to get a solid fixation of the fracture and, in the end, to allow an early patient's mobilization.

**Materials and method.** 38 cases of periprosthetic fractures have been treated in the Orthopedics and Traumatology Department of University Emergency Hospital in Bucharest, between 2010 and 2016. International Vancouver classification was used for all cases. The osteosynthesis saving the femoral stem was preferred in 22 cases, as its stability was not affected. Stem revision was performed in 16 cases, as this was unstable due to the fracture. Acetabular component was also revised in 4 cases, as the PE insert presented severe wear. The patients were aged 52 to 84 years old and sex ratio M/ F = 13/ 25. Osteosynthesis was performed using Dall-Miles plates and molded plates, with braided cables or wire cerclage. Long stems, uncemented with or without distal locking, were used in 16 cases.

**Results.** Postoperatively, the bone repair was efficient regarding the stability in most of the cases. The patients' mobilization was early in most of the cases, except for the very old patients with associated comorbidities and limited biological resources.

**Conclusions.** An appropriate surgical indication, adapted on each type of peri-implant fracture, leads to a good result, with early mobilization and the best consolidation of the fracture.

**Keywords:** periprosthetic, osteosynthesis, revision, consolidation, mobilization

## THE ROLE OF IMAGISTICS IN THE DIAGNOSIS OF CHONDROSARCOMAS

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Chondrosarcomas are malignant cartilaginous tumors, with many histological subtypes and three grades based on cellularity. They are the second most common primary malignant tumors of the bone.

From the histopathologically proved clinical cases, we are reviewing the imaging semiology - size, type of calcifications, cortical breach, endosteal scalloping, permeative or moth eaten bone appearance, and revealing other differentiation elements like location, age, and pain. A special point is the frequent difficulty in distinguishing between enchondromas and low grade conventional chondrosarcomas – as the lesions are very similar both histologically and radiographically. The radiologist should point the area to aim on the biopsy - at areas that may harbor foci of high-grade tumor, such as the ones of endosteal scalloping, soft-tissue components, or diffusely enhancing areas with minimal mineralization. It is known that with cartilaginous tumors, histopathologic examination of the biopsy specimen alone does not permit an accurate classification of the tumor. We emphasized the role of imaging in positive and differential diagnosis, management, and therapy of these bone tumors.

Keywords: chondrosarcoma, bone tumors, endosteal scalloping

## SCAPULAR METASTASIS BY RCC. CASE PRESENTATION

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Bony metastasis is a frequent occurrence in malignancies.

We present the case of a 75-year-old male patient who was investigated for a lytic lesion in the right scapula and was eventually diagnosed with metastatic renal cell carcinoma (RCC).

The main indications for embolization are reducing the risk of bleeding during and after surgery of hypervascular tumors, simplifying the manipulation of tumors, palliation of pain, bleeding, fever, and hypercalcemia-like symptoms in inoperable tumors, preventing further dissemination of a tumor, and increasing the response to chemotherapy and radiotherapy. Embolization may be a therapeutic alternative to surgery in cases in which surgery is inappropriate or associated with high risk.

In the case presented, CT examinations had a crucial role both in the diagnostic orientation and in the subsequent therapeutic decisions and proper monitoring under therapy.

Keywords: renal cell carcinoma, expansile bone metastasis

## LIMB SALVAGE AND MAJOR RECONSTRUCTION SURGERY FOR PATIENTS WITH MALIGNANT BONE TUMORS

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**Introduction.** Osteosarcoma and chondrosarcoma are the most common bone neoplasms.

The most frequent localization of the osteosarcomas is the lower extremity around the knee and the pelvis and proximal femur for chondrosarcomas. In such cases, the amputation is a common procedure but the limb salvage surgery has become more popular due to the development of chemotherapy and improved diagnostic techniques.

**Methods.** In the present study, the authors performed a retrospective study of patients diagnosed with osteosarcoma and chondrosarcoma around the knee and hip joint, treated with resection and reconstruction surgery. We evaluated the patients preoperative and postoperative using MRI and scintigraphy. The preoperative planning was made using Cedara I-View. Follow-up was between 1 and 4 years.

**Patients.** We included 2 patients with chondrosarcoma and 4 patients with other types of sarcomas. All tumors were localized in the lower limb area except for one case, which presented a fast growing fibroblastic sarcoma in the supraspinatus fossa. Using MRI, the tumors were staged Enneking IIa and IIb. Patients with tumor infiltration of nerves or vessels, massive soft tissue infiltration, or pathologic bone fractures were excluded from our study. All the cases included were diagnosed based on incisional biopsy.

**Results.** We recorded difficulties encountered in resection of the tumor, matching the preoperative planning with the intraoperative findings, rate of recurrence and soft tissue management. Our paper followed our results using GMRS type implants or straight reconstruction in the upper limb. Only one patient presented with lumbar metastatic disease after osteosarcoma after 2 years.

**Conclusion.** Reconstructive surgery seems a good choice for careful selected patients. This type of surgery is demanding and experience is needed.

We believe that a longer follow-up is needed for young patients to better evaluate the implant stability for mid-to long term.

**Keywords:** malignant bone tumors, limb salvage surgery, reconstruction surgery, osteosarcoma, chondrosarcoma

## DEALING WITH BONE METASTASES FROM BREAST CANCER - A PATHOLOGICAL AND CLINICAL OVERVIEW

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From breast malignant tumors, bone is the most frequent site of metastasis. Bone metastases from breast cancer are correlated with pathological fractures, spinal cord compression and other skeletal-related events as well as bone pain and hypercalcemia. These lead to impaired mobility, decreased quality of life, and overall decrease in survival. Clarification of mechanisms regulating bone metastasis has advanced greatly in the last years and this has translated into plentiful unused therapeutic options. Greater understanding of the pathophysiology of bone metastases has led to the detection and clinical efficiency of bone-targeted agents. This review summarizes the key evidence for current clinical practice and future directions.

Keywords: metastases, bone, breast cancer, pathology

## INTERDISCIPLINARY APPROACH IN BONE METASTASES OF OVARIAN CANCER

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Ovarian carcinoma is a deadly disease, with one of the highest case-to-fatality ratio amongst all gynecological malignancies. The high mortality of these tumors can be explained by the fact that most patients present at an advanced stage, with widely spread metastatic disease, especially within the peritoneal cavity. Extraperitoneal, occult metastases are usually rare in cancer surviving patients. Bone metastases are not a common finding, but their incidence seems to be higher than expected, as proven by autopsy studies. Because most clinicians are not very familiar with bone metastases of ovarian carcinoma, in this article we intended to discuss the most controversial aspects concerning the diagnosis of this type of disease.

Keywords: bone metastases, ovarian cancer, pathology

## CONVENTIONAL RADIOGRAPHY AND MRI DIAGNOSIS OF BONE TUMORS DEVELOPED AT THE KNEE

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**Introduction.** It is known that bone tumors have a predilection to develop for a certain skeletal bone segment. Also, bone tumors have a predilection for certain age groups.

The knee is a common site for bone tumors.

**Purpose.** Presentation of diagnostic parameters of conventional radiography as the first technique in the detection and characterization of bone tumors developed at the knee level and the criteria for differentiation of the malignant substrate from the benign (the type of bone destruction, the type of periosteal response, poorly defined margins) one. The value of MRI is also presented and illustrated as a unique imaging technique that allows the direct visualization of bone marrow with high spatial resolution for local staging of bone tumors.

**Material and method.** The present study aimed to investigate the radiographic and MRI imaging characteristics of bone tumors developed at the knee joint, which were retrospectively analyzed (October 2007 and November 2017) in a selected group of 91 patients. The limit of age between 11 and 67 years, 73(70%) men, 18 (30%) women. Examination protocol: complete clinical examination, radiographic knee examination in anteroposterior and lateral incidents. MRI standard protocol, native, and post paramagnetic contrast.

**Results.** Conventional Radiographic and MRI have been detected and characterized a number of 55 (67%) primary malignant bone tumors confirmed by histopathological diagnosis, ranging from 8 histopathological types and 37 (33%) cases of benign tumors with 9 histopathological types.

**Conclusions.** Radiological examination is the first investigation in the evaluation of knee bone tumors, suggesting the malignant nature expressed by the badly defined margin, bone destruction, discontinuous peristaltic reaction, and extension to the soft parts. MRI is a unique imaging technique that allows direct visualization of bone marrow with high spatial resolution and best tool for local staging of bone tumors.

**Keywords:** knee, bone tumors, conventional radiography, magnetic resonance imaging

## MAGNETIC RESONANCE IMAGING ASSESSMENT OF SOFT TISSUE TUMOURS

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**Introduction.** Due to the non-specific clinical findings and the reduced sensitivity of conventional radiography, soft tissue tumors (STT) were virtually unknown to radiologists until ultrasonography and computerized tomography were introduced. Because of its superior soft tissue contrast, multiplanar imaging capability, Magnetic Resonance Imaging (MRI) is the favored modality for the evaluation of soft tissue tumors.

**Purpose.** MRI detection, characterization, and illustration of soft tissue tumors developed in the musculoskeletal system

**Material and method.** The retrospective study refers to a group of 77 patients with suggestive clinical symptomatology for a soft-expanding process developed in the musculoskeletal system. Patients were examined according to a protocol that included complete clinical examination, two incidents radiographic examination, MRI, histopathological examination. The group consisted of 44 men (57%) and 33 (43%) women, aged between 7 and 80.

**Results.** We presented the spectrum of identified types of tumors based on the MRI semiology elements (homogeneity and intensity of the signal in the native and post-contrast standard sequences, intra or extra compartmental localization, tumor size and shape), segmental location, and incidence relative to the histological type.

**Conclusions.** Through high contrast resolution and the ability to acquire and display multiplanar, MRI is currently investigating choice in the detection and characterization of soft tumor tumors.

The multiplanar images (axial, frontal, sagittal and oblique) provide complete data on the actual tumor extension, the appearance of vessels, nerves, bone segments, and adjacent joints to tumor formations, allowing the proper staging and appropriate therapeutic behavior.

**Keywords:** soft tissue tumors, magnetic resonance imaging, diagnosis, follow-up

## LATE RESULTS AFTER CEMENT BONE FILLING IN TREATMENT OF GIANT CELL TUMOUR (GCT) - RETROSPECTIVE STUDY

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**Introduction.** Segmental or intralesional excision with curettage or complete resection can be one method of treatment for giant cell tumor (GCT), but the ideal filling material after curettage or resection remains controversial. The purpose of this retrospective study was to follow the latest results and complications regarding the recurrence or degradation of functional status that underwent cementation.

**Material and methods.** We reported 24 cases with GCTs during the last 15 years. All the patients were treated by intralesional excision or segmental resection followed by acrylic cement filling with or no metal augmentation recurrence-free survival proportions were used to evaluate oncological outcomes. Other parameters including surgical complication, general condition, and radiological classification were analyzed.

**Results.** We followed up 20 cases for at least five years postoperatory (from the 5<sup>th</sup> to the 9<sup>th</sup> year). The recurrence-free survival proportions showed that the recurrence rate in this group was for 4 patients (2 of them were at second surgery). 2 patients had degradation of implant cement fixation. Parameters including patients' age, gender, tumor location, and radiological classification did not affect the surgeons' treatments in cavity filling after GCT curettage.

**Conclusions.** Cementation should be recommended because of easy usage, have long lasting better results, and the better local tumor control than other methods (ex: bone grafting). The risk of recurrence is low and is not related to the cementation and metal augmentation.

The cost-benefit is also in favor of this technique.

**Keywords:** cementation, giant cell tumor, knee

## MULTIPLE METASTASES GESTATIONAL CHORIOCARCINOMA - A CASE REPORT

doi: 10.2478/rojost-2018-0041

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**Introduction.** Gestational choriocarcinoma (GC) is a malignant condition that develops from trophoblastic cells originating from a previous pregnancy, eutopic or ectopic. Metastatic choriocarcinoma is often diagnosed in the absence of a primary uterine or ovarian tumor, presumably because the latter has undergone complete necrosis. GC rapidly metastasizes spreading to lungs, brain, bones, bone marrow, liver, and other organs, but responds well to chemotherapy.

**Material and methods.** We presented the case of a 25-year-old woman with critical evolution after being diagnosed with choriocarcinoma following a complete hydatidiform mole pregnancy.

Even though the patient initially received proper treatment, due to poor follow-up compliance, the condition led to invasive metastases. When it spread to the musculoskeletal system and other organs, doctors were able to link symptoms to the choriocarcinoma diagnosis and chemotherapy was initiated. Unfortunately, the patient succumbed due to intracranial hemorrhage.

**Discussions.** GC is a highly and fast invasive malignancy, with rapidly growing tumors. It is often associated with hemorrhage, ischemic necrosis, and secondary inflammation. Often, by the time the tumor is discovered, X-rays of the chest and bones have already shown metastatic lesions. Chemotherapy success depends on the early detection and diagnosis of tumors after pregnancy.

**Conclusions.** Even though the initial diagnosis and treatment should have led to a favorable outcome, the patient's poor compliance was followed by rapid progression of the disease and, finally, exitus.

**Keywords:** gestational choriocarcinoma, metastases, chemotherapy

## RADIOTHERAPY IN OSTEOSARCOMAS

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Osteosarcoma represents a rare primary tumor of the bone, but it ranks 5<sup>th</sup> among children and adolescents. When diagnosed, many patients already have a disseminated disease at subclinical level. Current treatment includes surgery and chemotherapy. Radiotherapy is not commonly indicated, especially given the radioresistant characteristic of this type of cancer and it is usually administered for residual disease after surgery, inoperable tumors or in palliation, such as whole lung irradiation.

The purpose of this paper was to identify the real contribution of radiotherapy in osteosarcomas, with solutions to improve local control and survival.

We reviewed clinical studies, starting with the period before chemotherapy, in order to identify treatment techniques related criteria that may influence local control, survival, and secondary toxicity. Modern radiotherapy techniques are outlined with their dosimetric advantages. Following the 1990s, the combination between proper surgery and chemotherapy has eliminated the need for pre-operative radiotherapy. Most clinical studies have used adjuvant radiotherapy for patients with positive resection margins, with good results but hard to dissociate from those of the concurrently administered chemotherapy. Proton therapy is frequently indicated for these patients, due to the healthy tissue sparing characteristics. Studies have pointed out the correlation between radiotherapy response and tumor size, total administered dose, chemo sensitivity. Whole lung irradiation for patients with lung metastases is inferior to chemotherapy. Radiotherapy associated complications include joint fibrosis with reduced functional capabilities, bone fracture, allograft loss and carcinogenic risk.

Currently, radiotherapy is not the first choice when treating osteosarcomas, but new evidence is emerging for combining modern techniques, such as proton therapy with surgery and chemotherapy for patients with incomplete resections or inoperable tumors.

Keywords: osteosarcoma, radiotherapy, radioresistant, proton therapy

## A TOOL IN DIFFERENTIAL DIAGNOSIS OF A "CYSTIC" BONE LESION

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It is a power point program, which through a succession of steps, allows the obtaining of one shorter diagnosis, from a long list of possible ones, by choosing a character of the bone lesion. The aim of this program is to facilitate the differential diagnosis of this particular aspect of a bone lesion – the cystic, expansile osteolytic bone lesion - from a radiological point of view, but not only. The location, age, pain and other condition will be considered and will represent the first criteria in the differentiation. In this differential diagnosis, we discovered not only benign tumor lesions but also malign bone lesions or other non-tumoral conditions. We considered that this program could be easily used by the radiologist or the orthopedist in training and useful by also employing a representative photo gallery.

Keywords: expansile cystic bone lesion, compression bone atrophy

## A REVIEW OF 493 RADIOGRAPHS OF DOMESTIC DOGS AND CATS FOR NEOPLASIA AND NEOPLASIA SUSPICIOUS SIGNS

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Cats and dogs are routinely diagnosed with different forms of neoplasia. One of the simplest imaging techniques is radiography. This way one can assess neoplastic extent affecting soft and bone tissue. 493 radiographs from 235 dogs and cats have been reviewed.

372 radiographs for 94 dogs, an average of 5.2 images for every dog and 121 radiographs for 48 cats, an average of 2.5 images for each cat were done. 27 relevant or suspect radiographs were done in dogs, for a total of 14 neoplastic subjects, corresponding to 6 relevant or suspect images for a total of 3 neoplastic processes in cats. This is translated into a proportion of 7.25% relevant or suspect radiographs in dogs and 4.95% in cats. It also means that 14.89% of the dogs that require radiographic examination and 2.47% of the cats are suffering or are suspicious for neoplastic disease. 5 out of 14 (35%) dogs had relevant radiographs for bone tissue neoplasia, 1 dog (7%) for muscular neoplasia and 4 dogs (28.5%) were suspicious for digital (mixed soft tissue/ bone tissue) neoplasia. 1 out of 3 cats had relevant images for muscular neoplasia and 2 cats for maxillary/acetabular neoplasia.

Keywords: radiography, dogs, cats, musculoskeletal, neoplasia

## SURGICAL TREATMENT ALTERNATIVE TO THE HIP DISARTICULATION IN PATIENTS WITH MALIGNANT TUMOR OF THE PROXIMAL FEMUR

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**Background.** Primary bone tumors are rare and affect especially young persons, being at the same time very aggressive and mutilating, often also implicating the disarticulation of the affected hip. That is why it is necessary to find alternatives of treatment, so that these young people to be able to keep their normal functionality and mental comfort.

**Objectives.** The objective of this paper was to be able to offer a surgical treatment alternative to the hip disarticulation in case of malignant tumors of the proximal femur in young patients.

**Methods.** We present the case of a 25-year-old female patient, who was hospitalized in our clinic for pain and functional impairment of the right hip. The clinical and radiological exams established the diagnosis of fracture of pathological bone of the proximal femur and it raised the suspicion of a tumor with malignant characters. We performed arteriography of the right inferior member, which showed a very good vascularized tumor, possibly vascular, localized to the proximal femur, arterially powered by the branches of right profunda femoris artery. We surgically intervened and made an incisional biopsy with anatomopathological exam, which established the diagnosis of osteosarcoma. Then, we practiced the segmental resection of the tumor, preceded by the embolization of the right femoral artery and after that the reconstruction with bipolar cemented modular prosthesis of the right hip. The patient had a favorable evolution, she did neuromotor rehabilitation, and then she presented to the oncologist for the initiation of adjuvant chemotherapy, which she followed conformably to the recommendations.

**Keywords:** osteolytic tumor of the proximal femur, reconstruction prosthesis, hip disarticulation

## TRANSARTERIAL EMBOLIZATION TREATMENT OF SACRAL TUMORS

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**Objectives.** Sacral tumors represent about 1-4,3% of all bone tumors. They typically present with an abundance of blood vessels. Due to their anatomical localization, they are hard to approach surgically. Thus, a presurgical neoadjuvant therapy is indicated. The preoperative angiography with the embolization of the nutritive arteries decreases the perioperative blood loss and the symptomatology, and even decreases the volume of the tumors that cannot be surgically approached.

**Materials and methods.** The principle of embolization consists in the targeting of the nutritive tumoral artery and in obturating it with embolic agents (polyvinyl alcohol, embospheres, etc.) through selective catheterization under angiographic control.

The biopsy of the tumor is essential for certain diagnosis. The histological type of the tumor and the degree of differentiation influence the tumor's physiopathology and often influence the therapeutic decision regarding its degree or recurrence. In some cases in which the tumor's degree of extension increases the surgical risk, serial embolization can be used as a primary method of treatment. Because of the late onset symptomatology, when they are discovered they are extended and the degree of invasion in adjacent tissues is so high that it requires en bloc resection with nerve root sacrifice to assert complete excision and low recurrence rates.

**Results.** The patients who undergo surgical treatment usually bleed, and the perioperative blood loss and the need for blood transfusion volumes were halved in the cases in which presurgical transarterial embolization was performed.

**Conclusions.** Transarterial embolization of sacral tumors is a procedure indicated as a neoadjuvant presurgical therapy to decrease the blood loss risks and for the tumors that cannot be surgically removed it is used in the palliative treatment to reduce symptomatology.

**Keywords:** sacral tumors, transarterial embolization

## IMAGING DIAGNOSIS OF A PROXIMAL TIBIA TUMOR – CASE PRESENTATION

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**Introduction.** 30 years ago, the primary role of radiology in tumor pathology was predominant in establishing the diagnosis. A wide range of techniques has been developed, allowing the interventionist radiologist to apply new procedures to patients with tumor pathology. This improved both the diagnosis and the treatment of tumor lesions.

**Material and method.** A 19-year-old male patient, accused pain and functional knee failure, and pain in the ipsilateral ankle, which started about three months before, because of a sprain. Following the clinical examination, a suspicion of a meniscal lesion associated with a lesion of the ankle ligament complex arose. The magnetic resonance imaging revealed the meniscal lesion, but changes in the proximal tibia were observed, which required computed tomography of the knee. The presence of an osseous tumor at the proximal tibia was revealed. Given the unpredictable evolution of tumors in young people, a bone scintigraphy was decided to be performed.

**Results.** The imaging studies commonly used in assessing the patient with musculoskeletal tumor pathology are radiographs, nuclear magnetic resonance, computed tomography, bone scintigraphy. Magnetic resonance imaging is the most sensitive method of diagnosis, allowing the assessment of the extent of the tumor formation in the medullary canal, but also in the adjacent soft tissues.

**Conclusion.** After analyzing the patient's history, the clinical, paraclinical and imaging examination, and the differential diagnosis will be established and the optimal treatment will be decided in this case.

**Keywords:** proximal tibia tumor, magnetic resonance imaging, computed tomography

## SECONDARY BONE DETERMINATIONS IN CHORIOCARCINOMA

doi: 10.2478/rojost-2018-0048

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Gestational trophoblastic diseases represent a heterogeneous group of disorders that arise from trophoblastic epithelium. Choriocarcinoma is a highly anaplastic malignancy derived from trophoblastic cells. It is characterized by the secretion of human chorionic gonadotropin and early hematogenous metastasis. Metastatic choriocarcinoma in bones is very rare. Gestational trophoblastic diseases can follow normal pregnancy, ectopic pregnancy, abortions or molar pregnancy. However, the presence of bone metastases in a young woman at reproductive age requires systematic assessment for a primary lesion, for 1-2 years. This paper aims to present the bone sites where these metastases can occur, as well as the review of literature supported by a pictorial essay.

Keywords: trophoblastic diseases, metastases, reproductive age

## BONE METASTASIS SECONDARY TO VULVAR CANCER

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Bone metastases from a vulvar cancer are extremely rare with only few reported cases in literature. Some cases were reported, in which patients developed pathologic fractures within eight months following radical surgery for advanced vulvar carcinoma. It is unanimously recognized that metastatic vulvar cancer is a rare condition. Therefore, information on metastatic determinations and corresponding prognosis or therapeutic approaches is very low. This paper is a review on some extremely rare conditions, such as bone metastases in vulvar cancer.

Keywords: rare condition, metastases, vulvar carcinoma

## IMAGING DIAGNOSIS OF A SHOULDER TUMOR – CASE PRESENTATION

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**Introduction.** The most common and used molecular imaging techniques used in tumor pathology are the following: optics such as fluoroscopy, bioluminescence, and spectroscopy, radionuclides such as positron emission computed tomography, magnetic resonance with or without contrast substance, ultrasound and computed tomography.

**Material and method.** A 39-year-old male patient accused having a shoulder tumor beginning 6 months before with a slow increase in volume without symptoms, pain, local temperature changes, and neurological phenomena. The clinical examination revealed the presence of an elastic consistency tumor, adherent to the bone but movable in soft adjacent tissues, without spontaneous and palpation pain, and local swelling. There was a slight functional embarrassment in conducting the abduction maneuver, but without limiting the amplitude of the movement.

**Results.** Radiography of the shoulder did not reveal any significant changes. Magnetic resonance imaging of the shoulder and contrast-enhanced magnetic resonance imaging of the shoulder were performed. The evoked changes required a computed tomography of the shoulder.

**Conclusion.** The thorough analysis of the imaging investigations and the clinical, paraclinical, and biological context of the patient will lead to the indication of the treatment and the optimal surgical time.

**Keywords:** shoulder tumor, contrast-enhanced magnetic resonance imaging, computed tomography

## PERSONALIZED SURGICAL PLANNING – THE USE OF 3D PRINTING IN ONCOLOGICAL PATHOLOGY

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**Introduction.** Among the cases of malignant tumors, gathering 30% of them, the most frequent is the osteosarcoma. It occurs especially in children and young adults, the mean age being 14 years old. The treatment consists initially in neoadjuvant chemotherapy, followed by the surgical removal of the tumor. Due to aggressive malignant features (rapid increase in size, tendency to invade surrounding tissues, variable location), in multiple cases, the surgical treatment of osteosarcoma becomes a true challenge.

**Materials and methods.** Nowadays, it is possible to create 3D printed models, by using CT and MRI, which are superior to the 3D graphical reconstructions. The 3D printing technique facilitates the production of these 1:1 scale printed models that faithfully embody the patient's particular features concerning the anatomic pathology. The benefits gained from using such a modern tool allow the orthopedic surgeons to establish the measurements of a precise resection and to simulate the surgical maneuvers, as part of an elaborated modern surgical planning.

**Results.** In this article, we presented the case of a 10-year-old patient diagnosed with femoral osteosarcoma and treated with neoadjuvant chemotherapy followed by GMRS surgical approach based on a preoperative planning involving a 3D printed model. This piece was used to provide precise information regarding the tumor, to allow preoperative measurements and a surgical simulation.

**Conclusion.** The surgical accuracy can be increased by using a personalized preoperative planning based on a 3D printed model, leading to a lower rate of long/short-term complications, recurrences, or metastases.

**Keywords:** 3D printing, oncology, osteosarcoma, personalized preoperative planning

## COMPARISON IN THE ORAL STATUS AMONG 123 SMOKING AND NON-SMOKING PREMENOPAUSAL AND MENOPAUSAL PATIENTS

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A cohort of 123 patients was split into two main categories, premenopausal and menopausal. Each of the two was also split in smoking and non-smoking. The objective of the study was to find whether there is a difference between smoking and non-smoking, menopausal, and premenopausal patients. Each patient had the oral status stated on the radiological findings for missing teeth, root canal treatments and bone resorption greater than 5 mm. In total, there were 59 premenopausal patients (35 non-smoking and 24 smoking) and 63 menopausal patients (39 non-smoking and 24 smoking). Non-smoking menopausal patients had 273 missing teeth, 212 root canal treatments and 163 bone resorptions greater than 5 mm. In contrast, the smoking menopausal patients had 258 missing teeth, 70 root canal treatments, and 187 bone resorptions greater than 5 mm. The premenopausal non-smoking patients had 128 missing teeth, 139 root canal treatments and 82 bone resorptions greater than 5 mm. In contrast, premenopausal smoking patients had 111 missing teeth, 100 root canal treatments and 144 bone resorptions greater than 5 mm.

As a general conclusion, premenopausal patients lost 3.65 teeth, had 3.97 root canal patients and 2.34 bone resorptions in the non-smoking group compared to 4.62 missing teeth, 4.16 root canal treatments and 6 bone resorptions for each one in the smoking group. The menopausal non-smoking group had 7 missing teeth, 5.43 root canal treatments and 4.17 bone resorptions for every patient compared to 10.75 missing teeth, 2.91 root canal treatments and 7.79 bone resorptions for every patient in the menopausal smoking group.

Keywords: premenopause, menopause, smoking, radiography, oral status

## MECHANISMS OF BONE METASTASIS OF MALIGNANCIES OF THE GENITO-MAMMARY AREA

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Bone metastasis is a frequent complication of advanced genito-mammary cancer patients. Skeletal involvement is particularly common in breast cancer. Bone metastases induce a wide range of symptoms, lowering the quality of life and shortening survival. The normal bone remodeling process is deeply affected in all types of metastases: osteolytic, osteoblastic, and mixed. The main mechanisms involved in bone metastatic dissemination are the expression of adhesion tumor molecules and corresponding receptors within bone marrow and bone matrix cells; local growth factors, molecular mechanisms of remodeling the hematopoietic stem cell activity, and alteration of the expression of the post-transcriptional regulatory microRNAs of the gene expression are the new theories developed from recent studies.

Abnormalities in the number of copies of the 16q23 gene explain the increased risk of bone metastasis of breast cancer compared to its dissemination to the other organs; the mutual interaction between tumor cells and the bone microenvironment constitutes the element that stimulates both bone destruction and tumor development. Endothelin -1, bone morphogenic proteins, platelet-derived growth factor, Wnt proteins stimulate proliferation and osteoblastic activity. Genomic and proteomic studies underlie the development of new therapeutic agents for the treatment and prevention of bone metastases.

Keywords: bone metastases, genomics, proteomics

## MALIGNANT NEOPLASMS OF BONE AND ARTICULAR CARTILAGE –HOSPITAL BURDEN IN ROMANIA

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**Introduction.** Cancers of bone and articular cartilage are relatively rare, and a global analysis was not performed up to present in Romania due to the lack of a national registry for these diseases. This study aimed to explore the hospital burden due to malignant neoplasm of bone and articular cartilage in Romania and the general characteristics of the hospitalized cases.

**Materials and methods.** We used the data reported in the routine statistic system during 2012 and 2016 and we analyzed the number of cases discharged from hospitals by age group, gender, and duration of hospitalization.

**Results.** The number of hospitalized cancers of bone and articular cartilages decreased by 17% in the last five years (2012–2016) but this decrease was higher in other/ unspecified cancers (22%) and lower in limb cancers (10%).

Among the 1872 cases reported in 2016, 47% were limbs' cancers and the rest, cancers of others/ unspecified sites. Males accounted for 62% of all cancers (58% of limbs cancers and 65% of other cancers,  $p=0.001$ ,  $\chi^2$  test). Distribution by age showed that 17%, 62% and 21% of the cancers occurred in age-groups 0-14, 15-64 and 65+ respectively, but limbs cancers occurred in a significantly higher proportion in children (29% vs. 7% of other cancers,  $p<0.001$ ). 16983 days of hospitalization were reported in 2016 for this pathology, with an average length of stay of 9.07 days (9.37 and 8.81 days in limbs and other cancers respectively).

**Conclusions.** More detailed analysis of routine reported data is required for understanding the characteristics and trends of bone cancers in Romania.

**Keywords:** malignant neoplasm of bone and articular cartilage, hospital burden, trends

## GIANT CELL TUMOURS OF THE TENDON SHEATH – PARTICULAR MRI ASPECT

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Giant cell tumor of soft tissue (GCTST) is usually of synovial origin. It affects synovial membrane, serous bursae, and tendinous tunnels. The most common localizations are in the hands and forearms.

Anatomopathological, GCTST is considered as being composed of a cellular fibroblastic stroma in which the tumor cells are distributed. This type of tumor is composed of a mononuclear complex and osteoclast-like giant multinucleated cells, similar to those found in the giant cell tumor at the bone level.

Histologically, some authors consider that GCTST is a strictly benign tumor, consisting of well-defined multinucleated histiocytes admixed with eosinophils, lymphocytes and scattered spindle-shaped cells, or hemosiderin deposits in its structure, and tumor cells do not have mitosis or atypia. Other authors consider that GCTST is a type of low-grade sarcoma; this entity was named "malignant fibrous histiocytoma, giant cell type" due to the histological similarity with malignant fibrous histiocytoma.

The case of a female patient, suspected of giant cell tumor of the brachioradialis tendon sheath was presented. The MRI aspect of this tumor is not the typical one. The MRI examination consisted of a series of sequences, with T<sub>1</sub> and T<sub>2</sub> weighted images, fat suppression sequence, performed in all three planes, axial, sagittal, and coronal. Also, the examination was performed native, after the administration of intravenous contrast substance, when the 3D multiplanar sequences were performed. The final diagnosis was the post-operative anatomopathological examination, which confirmed that it was a giant cell tumor. We present this case for its less frequent localization – forearm, and the interest it might have in surgical treatment.

Keywords: MRI, giant cell tumors, tendon sheath

## SOFT TISSUE SARCOMAS OF EXTREMITIES - MRI ROLE IN THE DIAGNOSTIC EVALUATION

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**Introduction.** Soft tissue sarcomas (STS) are rare entities of soft tissue cancers.

Their incidence is low, of only 1% of the malignant tumors.

In terms of localization, most of the STS affect the extremities, and their incidence is much higher in children than in adults.

**Material and method.** The present paper is a retrospective study that includes tumors with lower limb localizations, including the bony pelvis, over a 3-year period (2013-2016). The study group consisted of 29 patients who, following the MRI examination, were diagnosed with soft-tissue tumors. Of the 29 patients, 17 patients had a MRI (magnetic resonance imaging) and an anatomopathological diagnosis of leiomyosarcoma.

The location of the tumor, its characteristics, and the relationship with the adjacent anatomical structures were analyzed in all cases.

**Results.** The ages of the final group of 17 patients ranged between 28 and 84 years, with female predominance. In terms of localization, one showed a muscle tumor in the pelvis, namely left oblique muscle, other cases being located in the thigh and knee. A special importance was given to the superficial and profound location. In 5 cases, the tumor was localized in subcutaneous fatty tissue, thus superficial.

In terms of the contours of the tumor, well-defined margins were present in 11 cases, and poorly defined contour in 6 cases.

Regarding the size, the leiomyosarcomas in our study had dimensions between 5.2 cm and 18 cm, and their structure was inhomogeneous, with the presence of necrosis and calcifications. Necrosis was found in 14 cases, and calcifications were present in 68%, being more frequent than necrosis. Except for the necrotic areas, the contrast enhancement was intense.

**Conclusions.** Although the diagnosis is always histopathological, the MRI plays an important role in defining a precise localization and tumor characteristics.

**Keywords:** leiomyosarcoma, MRI, diagnosis

## RECONSTRUCTIVE SURGERY IN NOSE TUMORS

doi: [10.2478/rojost-2018-0057](https://doi.org/10.2478/rojost-2018-0057)

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**Introduction.** Cutaneous malignancies localized on the nasal pyramid are one of the most frequent non-melanocytic skin cancers with a great psychosocial impact. A predominant pathology of the elderly is distinguished by slow development, with a tendency to ulceration and addressability to medical services in advanced local stages. Reconstruction after oncologic intervention is diverse, locoregional flaps, grafting, and simple direct sutures can be made, the case per se dictating the appropriate attitude. The variables to be considered are location, size of the remaining defect and quality of potential donor areas. The following are also taken into account: reduction of morbidity, increasing quality of life, patient's psychological impact.

**Materials and methods.** 7 cases of basocellular carcinoma of the nose addressed between 2017-2018 are described throughout an observational analysis based in the Emergency Hospital for Plastic Reconstructive Surgery and Burncare in Bucharest, referred to by various reconstructive methods, depending on the particularities encountered. Locoregional flaps-bilobed, nasogenian, frontal, dorsal nasal – as well as full-thickness skin grafts and simple direct sutures were performed. **Results.** Carcinoma excision was complete and safety margins were confirmed histopathologically. Evolution of postoperative patients was favorable without complications.

**Conclusion.** There are numerous surgical options for repairing nose defects. Oncological radicality and satisfactory aesthetic and functional outcome are the main objectives in choosing the method. The aims of reconstructive surgery are functionality of the nose, aesthetic appearance with finer scars, preserving the aesthetic subunits of the nose, but also the relationship with the neighboring structures.

**Keywords:** nasal pyramid, non-melanocytic skin cancers, reconstruction after oncologic intervention

## POST-OPERATIVE COMPLICATIONS IN TRAM FLAP BREAST RECONSTRUCTION AFTER MASTECTOMY

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**Introduction.** Breast cancer is the main cause of mortality for neoplastic diseases in women worldwide. Since the incidence is increasing every year, the need for reconstructive techniques increases and autologous tissue reconstruction procedures are also gaining ground over the more popular expander/ implant techniques.

A hypertensive and obese patient is admitted by SCUCPRA's Chronic Diseases Service, with a post-mastectomy scar on the left breast, with normal aspect. A TRAM Flap is performed through an oblique tunnel for transposing the tissue over the defect. The abdominal defect was covered with polypropylene mesh. Three days post-operatory, the patient presented an umbilical necrotic scar of 6/ 3 cm and a 4/ 3 cm necrotic scar in the medial zone of the TRAM Flap.

**Materials and method.** Four days post-operatory, the patient presented a 10/ 5 cm brown-black colored dehiscent umbilical scar and 2 dehiscent areas of 4/ 1 cm and 5/ 1 cm inferior and superior, on the TRAM Flap. Excisional debridement of the ulceration was performed, and the abdominal defect was covered with a split-thickness skin graft. The TRAM Flap was also debrided and immediate suture was performed.

**Conclusions and results.** Necrosis is an important complication that can occur both at the abdominal level, as well as on the TRAM Flap, after a breast reconstruction, affecting both the general state of the patient and the long-term results of the reconstructive method.

**Keywords:** necrosis, TRAM Flap

## MULTIDISCIPLINARY APPROACH IN THE TREATMENT OF MALIGNANT BONE TUMORS

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**Introduction.** There are two types of tumor lesions at bone level: primary tumors and bone metastasis. These lesions cause a decrease in the structural strength of the bone that may lead to fracture. The goal of the orthopedic treatment is to resect the tumor, alleviate symptomatology, and restore the function of the limb. The orthopedic treatment consists of two phases: tumor resection and limb reconstruction. Treatment of such lesions implies extensive preoperative investigations to determine the local and general extent of the tumor and procedures aimed to facilitate resection.

**Case presentation.** We present the case of a 58-year-old male, diagnosed with clear cell renal carcinoma three years before and treated by nephrectomy. Two months after surgery, the patient started reporting moderate pain in the hip, which gradually intensified. He was first seen in Foişor Hospital in December 2018 when a pathologic bone fracture in the trochanteric region of the right femur was discovered at the radiologic exam. This was supposed to be a bone metastasis from the previously operated renal cell carcinoma.

The MRI investigation showed the presence of a large, polylobed bone tumor with an inhomogeneous structure, sized 80/ 72/ 82 mm extending in the adjacent soft tissue. Bone scintigraphy of entire skeleton revealed no other lesions and abdominal MRI exam revealed neither the recurrence of the tumor or the presence of abdominal metastasis. Significant vascularization of the tumor, from branches of the deep femoral artery, was evidenced on the Angio Computer Tomography. Due to the known profuse bleeding of such lesions, an angiography with embolization was also performed. Embolization was done with PVA particles, with a lack of post-embolization load. The Angio Computer Tomography scan performed at three weeks after embolization showed a reduction in size of the tumor.

In March 2018 patient underwent bone resection and reconstruction with a G.M.R.S. tumor prosthesis. Resection was performed in a complex team involving also two vascular surgeons. The pathology exam confirmed it was a renal cell carcinoma bone metastasis.

**Results.** At one week after the surgical procedure, the operative wound was healing, the patient had no pain, and he was gradually regaining ambulation.

**Conclusion.** Surgical treatment of such neoplastic pathology is difficult and involves a multidisciplinary approach consisting of disciplines such as oncology, orthopedics, vascular surgery, and pathology. It also implies a significant contribution from radiology and interventional radiology.

**Keywords:** bone metastasis, GMRS tumor prosthesis, angiography, embolization

## DIFFERENTIAL DIAGNOSIS OF BENIGN TUMORS OF BONE RICH IN GIANT CELLS, BASED ON IMMUNOHISTOCHEMISTRY

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**Introduction.** The aim of this study was to investigate several cases of giant cell tumor of bone (TGC), chondroblastoma and aneurysmal bone cyst (ABC) by immunohistochemistry (IHC) with a panel of markers: p63, S-100, CD68, CD56, DOG1, Galectin-1, D2-40, CD34, CD45 and ki-67, some of which proved to be specific for a certain entity.

**Material and methods.** The cases were retrospectively selected from cases processed in our facility where the surgical excision material was histopathologically analyzed in optical microscopy using the usual staining hematoxylin and eosin. The immunohistochemistry exam was performed at INCDVB by indirect method avidin-biotin-peroxidase complex (C-DAB) with polyclonal antibodies (Dako) for S100; CD56, p63, DOG1, CD34, D2-40, CD45, ki67, and Galectin1 were performed in 14 cases out of which 10 were TGC, 3 chondroblastomas, and one primary ABC.

**Results.** Five out of ten TGC investigated showed p63 diffuse nuclear expression in the mononuclear cell. None of the 3 cases of chondroblastoma or ABC-primary or secondary (associated with the above mentioned tumors), expressed p63. Other variables, non-specifically encountered in all of the tumors, were emphasized by CD34 (vascular network), ki-67 (index of proliferation), CD45 (inflammatory infiltrate). DOG1 expression was found positive in all chondroblastoma cases.

**Conclusions.** p63 proved to be a useful biomarker in differentiating giant cell tumor of bone from central giant cell granuloma and other giant cell-rich tumors, especially chondroblastoma and ABC. Chondroblastoma was particularly rewarding in this investigation by demonstrating the dual immunohistochemical phenotype of the neoplastic cells, both chondroblastic (S-100, D2-40) and osteoblastic (CD56 and Galectin -1). DOG1, which is mainly used for the diagnostic of GIST, was found by many to be also specific, in the proper morphopathological context, for chondroblastoma.

**Keywords:** giant cell tumors of bone, p63, DOG1

## SOFT TISSUE SARCOMAS - SERIES OF CASES IN ONE SURGICAL DEPARTMENT

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**Introduction.** Soft tissue sarcomas (STS) are a heterogeneous group of tumors with over 80 different subtypes that account for approximately 1-2% of adult malignancies. Primary sarcomas arise from a variety of soft tissues and bone, and include fibrous connective, fat, and smooth, or striated muscle, vascular, peripheral neural and visceral tissue. With difficulties in establishing cell origin and pathogenesis, this condition lacks an effective and durable therapy with no predictive biomarkers and rapid diagnosis.

**Materials and methods.** We reviewed the cases of 21 patients treated in our clinic for soft tissue sarcoma over a 20-year period (1999–2018). We extracted the following information from each patient's medical record: disease status at presentation, histological diagnosis, American Joint Committee on Cancer staging, surgical procedure, oncological outcome, length of hospitalization, and follow-up information.

**Results.** All 21 patients (14 males and 7 females, aged between 19 and 88 years) underwent surgery and total excision with safety margins was performed with histopathological confirmation stating the tumor type and subtype. Some samples required immunohistochemistry for subtype differentiation. Chondrosarcoma and myosarcoma were the most common (5 patients). 8 patients presented local recurrence and metastatic disease with 6 cases receiving adjuvant chemotherapy. Only one patient presented for the 5-year follow-up.

**Conclusions.** STS are a rare group of tumors with poor outcome with surgical treatment being represented by total excision. We chose to present our clinic's experience to highlight the need for post-operative therapy advancements and to raise awareness on the difficulties in managing these cases.

**Keywords:** soft tissue sarcomas, surgical excision, post-operative treatment

## RESULTS EVALUATION OF RESECTION-RECONSTRUCTION OF KNEE PERIARTICULAR TUMORS

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Oncological resection and articular reconstruction through modular tumor prosthesis is a challenge for the surgeon, but at the same time gives the patient the certainty of keeping the function and hope for healing. Due to technical evolution, the recovery of osteoarticular post-resection tumor is today much more versatile and permissive, providing the comfort of the orthopedic oncologist surgeon during reconstruction and at the same time the patient satisfaction.

Purpose of the paper. Short-term and medium-term evaluation of surgical treatment outcome of bone oncological pathogenesis of the knee with modular tumor prosthesis.

Material and method. Recording based on the unique tumor registry of the Clinic in a monocentric, retrospective continuously study between 2009 and 2017, of all orthopedic oncology patients with malignant/ borderline tumors with metaphyso-epiphyseal knee periarticular involvement, beneficiaries of the resection-reconstruction with prosthesis modular tumor – a total of 21 cases. Case analysis included details of histopathological types of tumors, followed by Enneking staging, which was performed, alongside classical demographics.

The Malaware oncological resection technique was followed and the learning curve and results of the prosthetic modular prosthetic reconstruction were registered, considering failure for any of the following reasons: revision, necessity exhaustion of the prosthesis - infection, relapse, or amputation.

The functional evaluation was based on the revised Muscular-skeletal Tumor Society Score (rMSTS). Results and discussions. Only one case of failure was registered - a periprosthetic infection. The overall rate of apparently postoperative complications followed the literature data for this type of intervention - 40-50%.

Compared to amputation, the lower limb salvage process in the knee malignant tumors has proven to be cost-effective and has contributed to improving the quality of life, becoming one of the sustainable options for onco-surgical management in good cases selected.

The limits of the study are determined by the relatively short duration of follow-up, and the apparently large number of complications is nevertheless included in the international statistics related to such interventions.

Keywords: tumors, resection-reconstruction technique, tumoral modular prosthesis

## BORDERLINE GIANT CELL TUMORS (GCT) OF PROXIMAL TIBIAL EPIPHYSIS - ONCO-ORTHOPEDIC MANAGEMENT BETWEEN POSSIBILITIES AND LIMITS

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Intralesional tumoral procedures in giant cell tumor (GCT) are quoted as having a recurrence rate of up to 60%. Thus, a number of studies suggest that broad resection is associated with a lower local recurrence risk compared to intralesional curettage, increasing the free recurrence interval from 84% to 100%.

The TCG involvement of the proximal tibia occupies a particular place through the relationship with the articular line, but especially through the frequent, direct, or indirect interest of the extensor mechanism of the knee.

Purpose of the paper. Based on the unique tumor registry of "Foișor" Orthopedic Clinic, we proposed to follow all the cases of TCG with proximal tibial localized operation, beneficiaries of an "en bloc" resection and modular tumor prosthesis reconstructions - registering a number of 5 cases between 2009 and 2017.

Material and method. The initial evaluation was performed by radiography, CT-scan and MRI investigations and recurrence cases in which histopathological reassessment became mandatory after post-intralesional techniques were also included in the study.

The surgical technique followed tumor resection, tumor reconstruction, and the reconstruction procedure of the extensor of the knee, which involved the modulation of the modular tumor prosthesis with a rotary reversible flap of the medial gastrocnemius with the ankle of the patellar tendon to the prosthesis and flap.

Quantification of functional outcomes required the use of the revised Muscle-Skeletal Society Score (rMSTS) and postoperative complications were centralized; the most commonly reported being the peroneal nerve palsy.

Results and discussions. The results obtained were compared to the orthopedic oncology literature data for such a procedure, following their superposition and discrepancy.

The challenge of such an orthopedic oncology intervention is the reconstruction of the extensor, with definite functional implications of limiting the knee extension, as well as avoiding the peroneal nerve palsy.

However, the results can be reproducible, with an absent relapse rate.

Keywords: giant cell tumor, resection-tumor reconstruction, gastrocnemius medial flap

## OUTCOMES AND TREATMENT OF MALIGNANT TUMORS OF LONG BONES

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**Introduction.** With the advances in chemotherapy, the life expectancy of patients with malignant tumors of bones begins to rise and creates the opportunity for a more conservative treatment of such cases. The main complications after using reconstruction with bone graft are represented by mechanical failure, due to the lack of strong fixation, or biological failure of graft integration. Infection is another complication, patients being usually immunosuppressed. The aim of this study was to investigate a retrospective single center experience of surgically treated malignant bone tumors of long bones, respectively oncological, surgical, and functional outcome differences after biological reconstruction.

**Materials and methods.** Between 2007 and 2017, we conducted a retrospective study, with patients from Elias Orthopaedic Department.

70 patients with malignant tumors were treated. Only in 20 cases, resection-reconstruction was possible.

**Results.** Survival rate at 8-year follow up was 35%. Mechanical failure rate was 20%, graft resorption rate was 25%, and infection rate was 15%.

**Discussion.** Primary malignant tumors of bones are very rare, less than 1% of cancer cases, and yet there is no strict rule for treating these patients in specialized centers. Because of the small sample of patients, the heterogeneity of reconstruction methods and multiple types of grafts, this study also had some limitations. The mechanical or biological complication rate is higher in resection-reconstruction cases. Non-unions, fractures and infections are the most common complications.

**Keywords:** malignant tumors, bones, resection-reconstruction

## LONG-TERM FOLLOW-UP IN TUMORAL ARTHROPLASTY

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**Introduction.** Efficient management of a segmental resection or major osteolysis in the distal femur secondary to a tumor formation remains a controversial problem. Available options include the use of a modular or customized megaprosthesis implant. Modularity allows versatility for reconstruction and avoids the delay required to make a customized implant.

**Hypothesis and type of study.** Performing a clinical and radiological retrospective study that aims to evaluate long-term efficiency in the use of megaprotheses in segmental distal femur resections. Elaboration of patient selection criteria for modular prosthesis.

**Materials and methods.** We followed retrospectively 33 patients for 5 years from the time of the first surgery.

We evaluated the implant stability, the late complications rate, and the long-term functional recovery of patients with distal femoral tumors who underwent segmental resections and subsequently reconstructive arthroplasty.

**Results.** Thirty of the 33 patients maintained a mobile knee joint. An intermediate staging was performed at 30 months, which determined tumor recurrence in 2 patients, aseptic degradation of the components in 3 of them, and septic degradation in two of the evaluated cases. Because a tumoral recurrence occurred on the 45<sup>th</sup> month, the need for amputation of the prosthetic limb was imposed. The degradation of the polyethylene component (in 5 cases) was observed in the 5-year assessment.

The functional results were excellent with the Musculoskeletal Tumor Society Score of 88% and a Toronto Extremity Severity Scale Score of 94%.

**Conclusions.** Patients with distal femoral bone tumors undergoing modular reconstruction prosthetic arthroplasty have excellent functional results with retaining the affected limb and knee mobility. There was a close correlation between correctly applying the selection criteria for patients undergoing prosthesis intervention and functional recovery results.

**Keywords:** megaprotheses, distal femoral tumor, reconstructive arthroplasty

## TUMOR WITH AGGREGATE CELLS AT THE LEVEL OF RADIAL DISTANCE PIPE - TREATMENT AND EVOLUTION

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A 20-year-old patient presented to the emergency service with radial distal epiphysis after a minor trauma.

The radiological examination indicated a fracture at the radial distal epiphysis on the background of a tumor that occupied the radial epiphysis in its entirety, with cortical burglary in some places. When consulting the oncologist, a surgical intervention for biopsy material harvesting was performed. The anatomopathological exam showed: multiple fragments microscopically representing a tumor proliferation consisting of two cell populations, mononuclear cells, densely cellular and stroma pattern; areas of infarction, haemorrhage areas, rare intratumoral osteoid formation zones; appearance of giant cell tumor. The immunohistochemical examination confirmed the anatomopathological diagnosis adding, therefore, the aggressive character and the local relapse. The oncologist decided that it did not require oncology treatment but only orthopedic treatment. Orthopedic treatment required repeated surgery at intervals of about 5 months apart, caused by tumor recurrence. The first intervention consisted of 1/3 distal radius resection and replacement with a graft harvested from the peroneum. Tumor recurrence after 5 months required extirpation of tumor tissue and filling of cavity caused in the graft with a fluid bone substitute. Recurrence after another 5 months required removal of the graft that was invaded by the tumor and cubitus-metacarpal arthrodesis fixed with a screw plate. Currently, the patient is undergoing complementary oncology treatment finally initiated by a medical oncologist.

Keywords: giant cell tumor, bone tumor, tumor recurrence, radius tumor

## THE ANEURYSMAL BONE CYST - A CASE REPORT

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**Introduction.** The aneurysmal bone cyst is a benign bone tumor with a low incidence. Its presence within the bone of the hand is quite unusual. When it comes to its evolution, it is known to be an aggressive tumor with a progressive weakening of the bone structure.

**Objective.** This case report aimed to present the importance of keeping the hand function intact for patients who are usually in their first decades of life. As a reconstruction method, a radical surgical approach and grafting are both mandatory for the unit to have the mobility unaltered.

**Material and methods.** It is a case of a 15-year-old male with a giant aneurysmal bone cyst of the fifth metacarpal bone of the left hand. This tumor was surgically removed and the entire bone was rebuilt with an autologous bone graft from the iliac crest. The articular surface was preserved for the distal joint (the head of the metacarpal bone was spared).

**Results.** The surgical procedure concluding the resection and immediate grafting reestablished the function of the hand with no infirmity, and the results for the past 7 years after surgery kept being negative for relapse and the patient had great mobility within the segment.

**Conclusions:** The proper and correct surgical treatment of giant aneurysmal bone cyst located on the fifth metacarpal bone is the mandatory resection of the entire tumor for the high risk of pathological bone fracture with a severe impact on the mobility of the hand.

**Keywords:** benign bone tumor, autologous bone graft, hand surgery

## INTERDISCIPLINARY APPROACH IN CERVICAL NEOPLASM WITH SECONDARY DETERMINATIONS – A CASE REPORT

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**Introduction.** Cervical cancer is the third most common malignancy in women with gynecological pathology. Most of the times, patients are admitted to hospital in advanced stages, with multiple secondary metastases.

**Case report.** We report the case of a 70-year-old patient initially admitted in the Orthopedic Department of University Emergency Hospital in Bucharest with suspicion of pubis fracture. After clinical, imagistic and paraclinical evaluation, cervical cancer was suspected and the patient was transferred to the Obstetrics and Gynecology Department of University Emergency Hospital in Bucharest in order to identify etiology of the multiple secondary metastases. CT examination revealed liver determinations as well as pelvic lymphadenopathy, accompanied by suggestive neoplastic transformation of the cervix and invasion of the uterine body, parameters, and bladder; inferior branch of the pubis, and bilateral pubis, with a suggestive side-by-side aspect, were also distinguished from osteolysis. Histopathological examination following a cervical biopsy revealed non-keratinized squamous carcinoma with secondary imagistic findings, placing this case in FIGO IVB stage.

**Conclusions.** Due to the insidious evolution, cervical cancer can reach advanced stages. The prognosis of patients with advanced stage cervical cancer and bone secondary determinations is reserved.

**Keywords:** cervical neoplasm, secondary bone determinations, interdisciplinarity

## THE THERAPEUTIC APPROACH OF SOFT – TISSUE SARCOMAS. A 12 CASES ANALYSIS

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**Introduction.** Soft Tissue Sarcomas (STS) is a group of rare malignant tumors with mesenchymal tissue origin. At present, over 50 histopathological types with typical chromosome changes are described. Treatment is multidisciplinary, centered on the surgical approach.

**Method.** Between 2014 and 2016, 12 STS cases were treated in our clinic: 3 liposarcomas, 2 synovial sarcomas, 1 angiosarcoma, 2 rhabdomyosarcomas, 2 myxofibrosarcomas, 1 fibroblast sarcoma and 1 clear cell sarcoma. With the exception of angiosarcoma that benefited only from chemotherapy, the other cases were surgically approached, followed by radiotherapy in 7 cases, and chemotherapy in one case.

**Results.** Patient follow-up was for a minimum of 2 years. In 3 cases (fibroblast sarcoma, clear-cell sarcoma, synovial sarcoma), a local recurrence occurred between 3 and 9 months. In 2 cases (fibroblastic sarcoma, synovial sarcoma), pulmonary metastases occurred between 6 and 18 months and the patients died at 8 months and 2 years respectively. The rest of the cases were clinically and imagistically assessed (local MRI, lung CT) at 6 months for at least 2 years and showed no signs of local recurrence or metastasis.

**Conclusions.** The evolution of STS depends on the histological type and to the stage of diagnosis (local extension, degree of differentiation and presence of metastases). Therapeutic approach should be centered on an accurate resection, within the limits of oncological safety even with re-resection. Postoperative radiotherapy is used in most of the cases, and chemotherapy is reserved for special cases with unfavorable local evolution or metastasis.

**Keywords:** Soft Tissue Sarcoma, aggressive tumors, multidisciplinary approach

## MAXILARY SUPPURATIVE INFLAMMATION ON CHRONIC TREATMENT WITH BISPHOSPHONATES FOR BONE METASTASIS – A CASE REPORT

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**Introduction.** Bisphosphonates represent a class of anti-resorbable bone care drugs that inhibit the function of active osteoclasts and reduce bone resorption. They are used in the Oncology and Hematology specialties as adjuvants in the treatment of osteolytic bone metastases and associate osteonecrosis of the maxillo-facial bones, most commonly of the mandible, as an adverse reaction. **Material and method:** case report. We present the case of a 65-years-old female patient, with breast cancer and bone metastasis, under chronic treatment with bisphosphonates. She presented a chronically odontogenic suppurative maxillary rhinosinusitis induced by maxillary post-extraction osteonecrosis on the background of bisphosphonate treatment and fistula in the upper right vestibule. Surgery under general anesthesia and sequestrectomy were performed.

**Discussion.** The patient also associated coagulation disorders with mixed mechanism, adding an element of major surgical difficulty requiring a massive intraoperative transfusion with fresh refrigerated plasma to control hemostasis.

**Conclusions:** The side effects of bisphosphonates used in the treatment of bone metastasis on the maxillofacial bones are significant.

For this reason, the dental extraction in patients treated with bisphosphonates should be done with great caution and maxillary suppurative inflammation in post-extraction context in these patients should raise the suspicion of underlying bone necrosis.

**Keywords:** bisphosphonates, jaw suppurative inflammation, sequestrectomy

## RESECTION RECONSTRUCTION VERSUS AMPUTATION IN THE TREATMENT OF MALIGNANT TUMORS OF THE LIMBS

doi: [10.2478/rojost-2018-0071](https://doi.org/10.2478/rojost-2018-0071)

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Partial or complete excision of the tumoral segment with preservation of the limb extremity in the treatment of tumors is an alternative to amputation.

We present our cases with radical or wide resection and reconstruction with or without special prosthesis reconstruction.

We used an evaluation and prognosis score, which included surgical stage, site of tumor, size of tumor, surgical margin, functional mobility, and activity level after surgery.

Excision of the tumor with a wide margin, stable reconstruction and a good recovery is an alternative treatment to the amputation.

Keywords: resection, reconstruction, amputation, malignant tumors, limbs

## MANAGEMENT IN PERIACETABULAR PELVIC CHONDROSARCOMA

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The partial or complete excision of the hemipelvis with the sparing of the lower limb is an option of the treatment of pelvic chondrosarcomas and a therapeutic alternative of the interilio-abdominal disarticulation. The operation has the same indications as the interilio-abdominal disarticulation and offers a good solution for avoiding a mutilating operation.

A giant periacetabular pelvic chondrosarcoma developed in Ennequin zone II and partial zone III, was resected and reconstructed with iliofemoral cooptation after complex investigations – pelvic X-ray, CT, MRI, Biopic confirmation.

The wide excision of the tumor, a stable reconstruction, and an efficient recovery are essential for a successful treatment of pelvic chondrosarcomas.

Keywords: pelvic chondrosarcomas, resection-reconstruction, interilio-abdominal disarticulation

## SURGICAL TREATMENT FOR PULMONARY METASTASES OF OSTEOSAR-COMA

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**Introduction.** Osteosarcomas represent 40% of bone sarcomas and occur mainly in children and young adults. They are tumors with a high degree of pulmonary metastasis.

Pulmonary metastases occur in about 80% of the relapsed patients after primary tumor therapy, whether or not they have received chemotherapy. As therapeutic solutions, both first intention resection of the metastasis and the post-chemotherapy resection or repeated resections in each relapse, represent satisfactory results with prolongation of survival.

**Material and method.** The present study describes a group of 17 patients who were surgically treated for osteosarcoma with different localizations and who presented themselves in the thoracic surgery department during 2011-2016 with suspicion of pulmonary metastases. Three of them were at their second intervention for metastasis resection. Following investigations, 4 of them (23.5%) could not benefit from surgical resection of pulmonary metastases (lesional extension with postoperative vital risk or technical impossibility of metastatic excision). Surgical interventions were curative; lobectomies were performed in 4 cases (30.7%), atypical resections in 8 cases (61.6%) and one pneumonectomy (7.7%). Postoperative progression was favorable in all 13 patients.

**Discussions and conclusions.** Surgical excision of osteosarcoma pulmonary metastases can prolong survival and sometimes even cure disease. In order to benefit from the intervention, the patient should be served by a thoracic surgery clinic in the shortest possible time after the discovery of the pulmonary nodules. Thus, the need for thoracic imaging is required in patients treated for osteosarcoma. Late presentation makes the intervention impossible, particularly because of the lesional extension in the lung parenchyma or the invasion of the adjacent structures, extension given by the number of metastases or their size.

**Keywords:** pulmonary metastases, osteosarcoma, thoracic surgery

## DENOSUMAB TREATMENT IN A RARE, NEGLECTED GIANT CELL TUMOR (GCT) OF THE FEMORAL NECK: CASE REPORT AND LITERATURE REVIEW

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**Introduction.** GCT resembles an aggressive benign tumor of bone and its evolution based on the histological features is unpredictable. About 50% of the cases are located around the knee (proximal femur and distal tibia), with the proximal humerus and distal radius representing the third and fourth most common sites. Femoral neck location is unusual. We report a case of GCT located at the femoral neck level, in a 19-year-old female.

**Case presentation.** Onset was hidden by pathologic femoral neck fracture and, due to insidious symptoms, proper diagnosis and treatment were neglected for almost six months. After 6 months, the case was referred to our clinic and re-evaluated with complete examination and biopsy. Wide resection and tumoral arthroplasty of the hip was performed. Postoperative complete recovery was achieved and the patient returned to previous activities. After 2 years of normal clinical evolution, a neurological severe issue appeared; at this time, a cerebral metastasis was diagnosed. Once the positive diagnosis was achieved, 120 mg Denosumab treatment was initiated monthly. At 16 months follow-up, the patient was symptom free and continued Denosumab treatment.

**Discussion.** Denosumab is a human monoclonal IGG2 antibody inhibiting osteoclast differentiation, activation, and survival with applicable suppression of bone turnover in patients with multiple myeloma, osteolytic bone disease, and bone metastases from breast and prostate cancer.

It is also a useful drug for managing the GCT of bone and one excellent option in metastatic GCT. The long time safety and complications, especially in young female patients, are to be proven.

**Conclusions.** Early diagnosis and accurate management of GCT are mandatory in order to achieve good long-term clinical results. Denosumab treatment may be necessary in order to avoid secondary metastasis or local recurrence.

**Keywords:** giant cell tumor, femoral neck, cerebral metastasis, denosumab, surgery

## SYSTEMIC TREATMENT FOR SOFT TISSUE SARCOMA: WHAT IS STANDARD, WHAT IS NEW

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Soft tissue sarcoma (STS) is a biologically heterogeneous malignancy with over 50 subtypes. This solid tumor is one of the most challenging diseases to treat for the medical oncologist. STS often forms in the body's muscles, joints, fat, nerves, deep skin tissues, and blood vessels. The natural history of high-grade STS is characterized by a strong tendency toward local recurrence and metastatic spreading, despite optimal initial strategies. The lung is the most common site of metastases, with poor prognosis.

We present the current international guidelines for the adjuvant treatment and systemic treatment for advanced STS and the new discoveries.

Many new molecular targeting drugs have been tried in the last ten years, and some were approved for soft tissue sarcoma. The first approved was Imatinib, as a treatment for gastrointestinal stromal tumors (GISTs). Following Imatinib, other tyrosine kinase inhibitors (TKIs) received the approval for GISTs such as Sunitinib and Regorafenib, and Pazopanib for non-GIST soft tissue sarcomas. In 2016, FDA approved the first monoclonal antibody that targets platelet-derived growth factor receptor (PDGFR)- $\alpha$ , Olaratumab. The new treatment demonstrates an overall survival advantage. In this review, we aimed to summarize the results from the most recent studies on adjuvant treatment for high-grade STS and systemic strategies for advanced STS.

Keywords: soft tissue sarcoma, heterogeneous malignancy, systemic treatment

## DEFECT RECONSTRUCTION AFTER HIP TUMOR RESECTION - OUR CLINICAL EXPERIENCE

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**Aim.** Short and mid-term analysis of postoperative results after hip vicinity tumor resection and reconstruction with salvage of the lower limb.

**Material and method.** Retrospective study on a number of 13 cases: 6 pelvis tumors, 3 femur tumors and 4 femur and pelvis tumors. 3 out of the total pelvis tumors were treated using custom pelvis reconstruction prosthesis, the other ones using bone graft and standard implants. The femoral tumors were treated using modular prosthesis and bone graft and osteosynthesis implants.

**Results.** Short-term outcome was favorable.

**Conclusion.** Bone defect reconstruction after hip vicinity tumor resection is a technically difficult procedure, which requires significant material resources. In terms of quality of life, the results are clearly superior compared to tumor resection with the sacrifice of the affected member.

**Keywords:** hip tumor reconstruction, custom hip prosthesis, modular prosthesis, bone defect reconstruction

## SQUAMOUS CELL CARCINOMA DEVELOPED IN CHRONIC OSTEOMYELITIS

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**Introduction.** Squamous cell carcinoma is the second as frequency in malignant tumors of the skin, representing 20% of this type of cancer. Inferior lip squamous carcinoma is most frequent, of 94%, because the trauma, sunburns, smoke and radiations are more frequent. Metastasis at distance in the area with chronic osteomyelitis is a rare situation.

**Material and method.** A 78-year-old male, treated for inferior lip carcinoma, without any oncological treatment, was admitted in our clinic for a leg tumor on the anterior part, developed over a scar after osteomyelitis treated in the adolescence. The tumor growth was quick. We decided the treatment plan from the point of view of a multidisciplinary approach, plastic surgeon-orthopedist-oncologist-dermatologist. A biopsy from the extraosseous tumor was performed and after the histological confirmation, the resection of the tumor block was made. For the confirmation of the bone invasion, we had to repeat the immunohistochemistry twice because the first result was negative. Until the final decision, the patient had an external fixation on the leg. A large tissue appeared on the area of resection, the aspect being suggestive for granulation. Amputation was decided after the complementary investigations and another biopsy from the granulation tissue.

**Results and conclusions.** Squamous cell carcinoma of the lip needs prophylactic laterocervical ganglia resection for limiting metastasis.

**Keywords:** squamous cell carcinoma, chronic osteomyelitis, metastasis

## PELVIC CHONDROSARCOMA - THERAPEUTIC OPTIONS (LITERATURE REVIEW)

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Chondrosarcoma is a mesenchymal malignant tumor (primary or secondary) which is characterized by a cartilaginous mass formed out of neoplastic cells. It is one of the most frequent malignant bone tumors (after multiple myeloma and osteosarcoma), affecting more males than females (Ratio M:F=2:1). It appears with predilection in the pelvis and long bones - mainly the proximal portion of the humerus and femur. It is a unique primary bone tumor through its chemotherapy and radiotherapy resistance, the only effective treatment being the surgical one. As far as the pelvis is concerned, it is important to determine the location, the dimension, and the relation with the nearby structures of the tumor, in order to establish if it is possible to do a complete excision of the tumor and adapt the subsequent reconstruction of the pelvis. In the excisions of the pelvic chondrosarcoma, the choices are conservatory surgery (limb saving) and the radical surgery (conventional pelvic resection). The oncological resection is the primary goal, but the functional result and the patient's quality of life are also very important.

Keywords: chondrosarcoma, resection, reconstruction, pelvis

## PELVIC CHONDROSARCOMA - THE ROLE OF THE BIOPSY AND THE CORRELATION BETWEEN THE HISTOPATHOLOGICAL BIOPTIC DIAGNOSIS AND THE EXCISIONAL ONE

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Chondrosarcoma is one of the most frequent malignant bone tumors. We included in the initial study population 110 patients with pelvis biopsies and the histopathological result of chondrosarcoma. We excluded the cases with incomplete data. Thirty-five in block resections were included in the final study population. In the rest of the cases, the surgery was not made because of many considerations (multiple metastases, patient's refusal, and surgical contraindications). In three cases, discrepancies were noted between the grade of malignancy found after biopsy and the one confirmed through the surgical excision. This corresponds to a precision rate of 91,42 % (32/ 35) in the confirmation of chondrosarcoma. The accuracy of the histopathological diagnosis between low grade chondrosarcoma and high grade chondrosarcoma was of 94,27 % (33/ 35). We concluded that the image-guided biopsy is useful in determining the grade of malignancy of the chondrosarcoma and in the planning of the subsequent treatment. A multidisciplinary team (orthopaedic surgeon, radiologist, and pathologist) is needed to improve the diagnosis of the pelvic chondrosarcoma.

Keywords: chondrosarcoma, biopsy, anatomopathological diagnosis, pelvis