ROUNDUP360

Oncology

Avoiding pelvic hemipelvectomy

A malignant tumour of the pelvis can be a huge surgical challenge as a result of the complex pelvic anatomy, as well as the threat of local tumour spread. External hemipelvectomy is one solution although this can be associated with substantial morbidity and reduced function. Limb salvage is an alternative approach when adequate margins can be achieved, but long-term function and survival are unclear. Surgeons from **Rochester (USA)** have delved further into this by looking at patients who underwent limb salvage for malignant pelvic tumours. They determined long-term survival, development of late local recurrence and metastases, function, and the need for further reconstructive procedures for these patients. They retrospectively reviewed 60 patients who had been treated with pelvic limb salvage before 1989. The study involved the review of medical records as well as postal questionnaires incorporating Musculoskeletal Tumor Society (MSTS) and Toronto Extremity Salvage scores to the 38 patients who had no evidence of disease in 1989; 15 patients responded. The minimum follow-up was 23 years. The overall survival rate for the 60 patients was 45%, although when broken down into different stages of disease severity these figures were: 100% Stage IA, 75% Stage IB, 31% Stage IIB, and 0% Stage III. Late local recurrence developed only in patients with chondrosarcoma (three of 24), two patients developed late distant bone metastases and two had further reconstructive procedures. The authors conclude that pelvic limb salvage is a reasonable treatment if satisfactory margins can be achieved. If a patient with pelvic sarcoma is free of disease five years after sarcoma resection, the subsequent risk of death from sarcoma appears to be low. However, late local recurrence remains a risk in patients with pelvic chondrosarcoma. Unsurprisingly perhaps, patient-reported function of the salvaged limb declined with long-term follow-up.[1] At *360* we think this is first-class work as it presents a huge follow-up of a difficult condition to handle, despite being a level IV study.

Intramedullary fixation or endoprosthesis for the proximal femoral metastasis?

The most common site for a bone metastasis is the proximal femur, an area that can be stabilised either by intramedullary fixation or endoprosthetic reconstruction. However, as the authors of this study from **Los Angeles (USA)** write in this level III study, intramedullary devices are less expensive, less invasive, and may yield improved function over endoprostheses. However, which technique is better? To answer this, the researchers retrospectively reviewed 158 patients (159 proximal femoral metastatic lesions) treated with surgical stabilisation. There were 46 stabilised with intramedullary fixation and 113 were treated with endoprosthetic reconstruction. The mean follow-up was 16 months. The mean MSTS score was 24 of 30 (80%) after intramedullary fixation and 21 of 30 (70%) after endoprosthetic reconstruction. There were 12 complications (26%) in the intramedullary fixation group, including ten nonunions, six of which went on to mechanical failure. There were complications in 20 (18%) of the endoprosthetic reconstruction group, which consisted of ten dislocations (9%) and ten infections (9%). However, there were no mechanical failures with endoprosthetic reconstruction. All implants remained functional for the limited lifespan of these patients in each group at all time intervals. Endoprosthetic reconstructions were associated with increased implant longevity compared with intramedullary fixations (100% *versus* 85% five-year survival, respectively) and a decreased rate of mechanical failure (0% *versus* 11%, respectively).[2] The winner in *360*'s view? Endoprostheses, naturally. They demonstrated a lower mechanical failure rate and a higher rate of implant survivorship without mechanical failure than intramedullary fixation.

Extendible prostheses are not hazard free

Extendible prostheses have always struck *360* as very clever surgery, so it was pleasing to see this paper published from **Coventry (UK)**. Here, researchers looked at the initial seven-year results of an extendible component in 34 patients, in either the femur or tibia. The distal femur was replaced in 25 patients, total femur in five, proximal femur in one and the proximal tibia in three. The mean follow-up was 44 months, with 27 patients (79%) still alive at the time of review. The prostheses were lengthened by an electromagnetic induction mechanism in an outpatient setting and a mean extension of 32 mm was achieved without anaesthetic. However, this technique is clearly not hazard free. There were lengthening complications in two patients (failed lengthening in one and the formation of scar tissue in the other). Deep infection developed in six patients (18%) and local recurrence in three. A total of 11 patients required further surgery to the leg. Amputation was necessary in five patients (20%) and a two-stage revision in another. However, there was no loosening although two patients demonstrated implant breakage and required revision. The mean MSTS functional score was 85% at last known follow-up.[3] These early results demonstrate that the non-invasive extendible prosthesis allows successful lengthening without surgical intervention, but *360* agrees with the authors, that the high incidence of infection is a cause for concern.

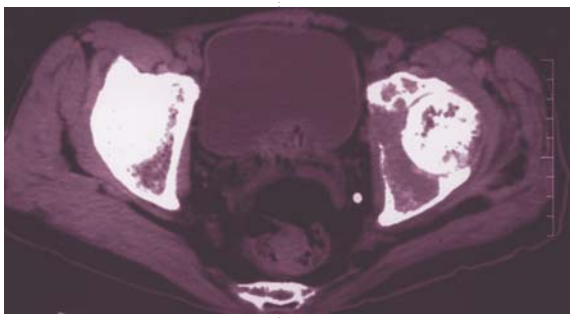
Rotationplasty is not always easy for patients to accept

Rotationplasty is a remarkable procedure, particularly for children under the age of seven years. As the authors of a paper from **Bologna (Italy)** write, it is a very particular surgical technique, which lies between ablative surgery and reconstruction with medullary nails. It involves the removal of a tumourous bone seg-

ment around the knee, while sparing the primary nervous and vascular branches. The distal portion of the limb is then turned 180° and aligned with the femoral stump so that the ankle is at the height of the contralateral knee. Walking is restored using a prosthesis assembled on the foot, which maintains its sensitivity. The turned ankle acts as a knee and the foot as a leg stump, thereby avoiding the trophic disorders of amputation stumps and the painful syndrome of the so-called phantom limb. Knowledge about the long-term sequelae of this procedure, in adults treated surgically in childhood for osteosarcoma of the lower limb, mainly concerns function and performance. However, the aim of this study was to explore the experience and the quality of life of the patients who underwent rotationplasty over a 20-year period. This was both a quantitative and qualitative study, using an SF-36 questionnaire in 20 patients for the former and a semi-structured interview in ten of these for the latter. Unsurprisingly perhaps, greater well-being was found in the Mental Component Summary scale for patients over the age of 24 years. Meanwhile, relational and emotional difficulty in adolescence, which had been partially overcome in adulthood, was revealed. The use of the SF-36 questionnaire was also of interest as a relationship was found between what emerged from the quantitative study and the contents of the semi-structured interview. The various strengths and weaknesses highlighted by this study are critical for parents and surgeons when choosing between the various surgical options available.[4] Impressive work for an impressive operation, thinks *360*.

Soft-tissue sarcomas – predicting survival

Soft-tissue sarcomas are rare beasts and even in the best hands, up to 30% of patients can develop metastases. Researchers from **Helsinki (Finland)** have looked at a web-based prognostic tool for this condition in an attempt to predict the ten-year sarcoma-specific survival. External validation was performed. They included patients referred to their hospital over a 15-year period. An earlier prognostic model included tumour size, necrosis, and the presence of any vascular invasion. However, the authors extended this model by adding the depth, location, grade, and size on a continuous scale. These models were then compared according to the accuracy of ten-year sarcoma-specific survival prediction. This upgraded model did well and it appeared that the addition of grade, depth, and location, as well as tumour size on a continuous scale significantly improved the accuracy of the prognostic model when compared with a model that included only size, necrosis, and vascular invasion. Those who need to access this system can find it at http://www.prognomics.org/sam.[5] At *360* we became quite depressed when randomly upping the value of the various prognostic factors to see the resultant outcomes. Soft-tissue sarcomas are definitely a cause for concern.



Poor survival for osteosarcoma of the pelvis

The pelvis is an uncommon site for osteosarcoma, reportedly accounting for only 5% of patients. The management of an osteosarcoma in this location is challenging, as it is difficult to achieve complete surgical excision with adequate margins. The result is a rate of local recurrence of up to 44%. A group from **Hartford (USA)** has looked further into this as although studies show overall survival rates that range from 19% to 47%, it is unclear whether such prognoses are universal for all patients or specific to single institutions. The Hartford group wished to establish three things: (1) the event-free survival and overall survival rates for patients with localised and metastatic pelvic osteosarcoma; (2) whether patients with unresected pelvic osteosarcoma have a similar survival to those with resected disease; and (3) whether the survival of patients with pelvic osteosarcoma was similar to that of patients treated for nonpelvic osteosarcoma. They did this by reviewing data from 1054 patients with osteosarcoma who had been treated in four studies between 1993 and 2005. There were 26 of the 1054 patients (2.5%) who had a primary tumour of the pelvis. At diagnosis, nine patients had metastatic disease. The mean follow-up period was 34 months. Estimates of the five-year event-free survival for localised *versus* metastatic disease of the pelvis were 22% *versus* 23%, respectively. The overall survival for patients with localised *versus* metastatic disease was 47% *versus* 22%, respectively. Meanwhile patients with osteosarcoma in all other locations had a five-year event-free survival of 57% and overall survival of 69%. The authors' analysis sadly confirms the poor survival for patients with pelvic osteosarcoma. Survival with metastatic disease in the absence of a pelvic primary tumour is similar to that for localised or metastatic pelvic osteosarcoma. Clearly, improved surgical or medical therapy is needed. Indeed, the authors conclude, and as *360* notes, patients with pelvic osteosarcoma may even warrant alternative or experimental therapy.[6]

Recurrent chondrosarcoma – defining treatment criteria

Defining the criteria for treatment for patients with recurrent chondrosarcoma is widely debated, so a paper from **Münster (Germany)** is interesting. The authors' aim was to define the treatment criteria for patients with such a recurrence by reviewing the data of 77 patients to examine the influence of factors such as the intention of treatment (curative/palliative), extent of surgery, resection margins, status of disease at the time of local recurrence and the grade of the tumour. A total of 70 patients underwent surgery for recurrent chondrosarcoma. For seven, surgery was not a viable option. Metastatic disease occurred in 41 patients, appearing synchronously with the local recurrence in 56% of cases. For patients without metastasis at the time of local recurrence, the overall survival at a mean follow-up after recurrence of 67 months was 74% compared with 19% for patients with metastasis at or before the development of the recurrence. Neither the type/extent of surgery, site of tumour, nor the resection margins for the recurrent tumour significantly influenced the overall survival. With the limited survival for patients with metastatic disease at the time of local recurrence (0% for patients with grade III and de-differentiated chondrosarcoma), palliative treatment, including local radiation therapy and debulking procedures, should be discussed with the patients to avoid long hospitalisation and functional deficits. For patients without metastasis at the time of local recurrence, the overall survival of 74% justifies an aggressive approach including wide resection margins and extensive reconstruction.[7] *360* hopes that this definitive finding may put much of the debate to bed, for a while at least.

MRI and the differentiation between benign and malignant lesions

How reliable is MRI in differentiating between benign and malignant lesions, wonders *360*? Some useful work has come out of

Stanmore (UK) in this respect. In their retrospective study, the authors looked at a total of 136 consecutive patients referred to a supraregional musculoskeletal oncology centre over a ten-year period with the diagnosis of a superficial soft-tissue mass. The features analysed included patient demographics, lesion size, MRI signal characteristics, margins, lobulation, haemorrhage, necrosis, fascial oedema, relationship to the fascia, as well as involvement of the skin. Comparison was then made with the final histological diagnosis. Of the patients reviewed, 58 were male and 78 were female, and the mean age was 49.9 years. The mean age of those with malignant lesions was 57.9 years, and that for non-neoplastic and benign conditions was 41.9 years. This difference was significant. A significant relationship was also identified between malignancy and lobulation, haemorrhage, fascial oedema, and necrosis. The relationship between skin thickening and skin contact and malignancy was also significant. However, size was not found to be an important determining factor for malignancy, with a significant proportion of malignant superficial sarcomas measuring < 5 cm at their widest diameter.[8] Good work, we think at *360*, as this will be very helpful in the clinic scenario before that specialist radiologist report appears.

Malignant fibrous histiocytoma

A common sarcomatous malignancy of adulthood is the malignant fibrous histiocytoma. However, as authors from **Larissa (Greece)** report, only a few series have separately studied the clinical behaviour and prognosis of this malignancy. The team retrospectively reviewed 61 patients who had been treated for a soft-tissue high-grade malignant fibrous histiocytoma of an extremity. There were four patients who had a history of another malignancy and were excluded from analysis. In 12 instances patients had been referred with an incomplete earlier excision, so re-excision of the tumour bed was offered. Clinical and treatment variables were analysed for their impact on any complications of treatment, local recurrence, metastatic disease and overall survival. There were four patients who underwent a primary amputation and 23 who required a primary reconstructive procedure for wound closure. There were complications of wound healing in 28.3% of the limb-sparing group of patients. Local recurrences developed in 11 patients (19.3%), of whom six had a second local recurrence. There were 18 patients (31.5%) who developed metastatic disease. Overall survivorship was 66.7% at five years. It is clear that the overall prognosis for this tumour is poor. Although a local recurrence can be managed with re-excision, the tumour has a high second recurrence rate. Meanwhile an increased tumour size is associated with a shorter metastasis-free interval, which significantly decreases survival.[9]

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