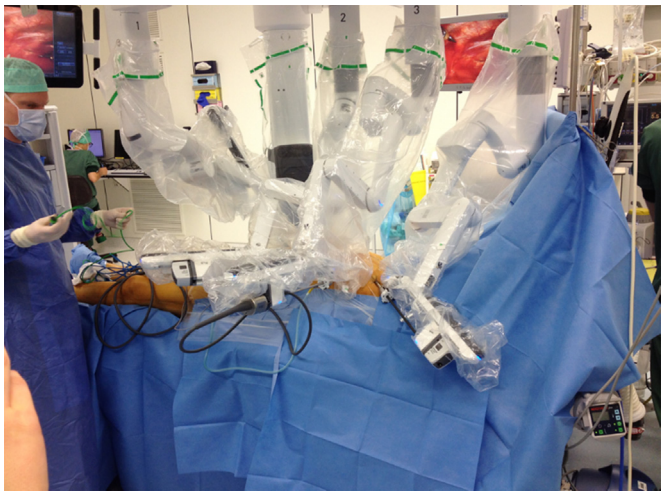

Figure 2: Operative setting of the da Vinci Surgical system used for harvesting the left internal mammaria artery (LIMA) in skeletonized fashion.

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Pathologic femur fractures following limb-salvage surgery and radiotherapy for soft tissue sarcomas: They don't heal!

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Introduction: Combined limb-sparing surgery and radiation therapy are considered the standard of care for soft tissue sarcomas (STS) of the extremities. The correlation between radiation therapy and the risk of post radiation fracture is known but underestimated and can end up in serious long-term complications.

Case description: We reviewed the records of 3 patients with pathological femur fracture years after wide local excision of a STS of the proximal lower extremity with postoperative radiation therapy. All patients received more than 50 Gray to the entire femur circumference. No one received perioperative chemotherapy. During surgery, all patients had bone exposure, whereas only one patient had the periosteum stripped.

Results and Conclusions: Two patients were female and one male. The median time from surgery/radiation to fracture was 116 months (range, 84 to 156 months). The median age at the time of diagnosis was 66 years (range, 54 to 79 years). All fractures occurred within the radiation treatment field. Two fractures occurred after minimal or no trauma, one fracture occurred after a mountain bike fall. All three fractures 3/3 (100%) developed a non-union. One patient died due to uncontrolled pulmonary metastasis and local recurrent disease. In the second case we had to perform an exarticulation at hip level due to an uncontrolled infected non-union with soft tissue defect despite several surgical revisions. The third patient is still under treatment of his non-union.

Take home message: Local control rates after combined therapy for the treatment of soft-tissue sarcomas are high. However, pathologic fractures after radiation therapy pose an extreme challenge in their treatment and may be associated with long-term complications that can cause physical disability and impairment of the quality of life.

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Non-union of paediatric carpal fractures: A case report and current concepts review

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Introduction: Paediatric carpal bone fractures are rare, and usually secondary to significant direct trauma. Diagnosis can commonly be missed or the significance of the injury not completely recognised on presentation. During development, the ossification centre of each individual carpal bone is surrounded by a spherical growth plate. This acts as a protective barrier against injury. As the child reaches adolescence the critical bone-to-cartilage ratio is reached, and so, carpal bone fractures start to become more common.

Case description: A 12 year-old boy presented to the emergency department with right wrist pain following a fall from his bicycle while travelling at speed. The impact was sustained directly on to an outstretched hand, resulting in a closed injury. Radiographs demonstrated a dorsally displaced Salter-Harris III fracture of the distal radius with associated displaced fractures of the ulna styloid and lunate. The patient reported reduced sensation and tingling in the thumb, index and radial aspect of middle finger consistent with the distribution of the median nerve. Motor supply was intact. The fracture was initially mobilised with a dorsal plaster slab. The patient was taken to theatre the following morning for manipulation under anaesthetic and plaster immobilisation. Satisfactory reduction of the distal radius fracture was achieved with the lunate and ulnar styloid fractures not addressed. Median nerve symptoms improved somewhat following the procedure but did not completely resolve. At 10 days post-operatively check radiographs demonstrated the distal radius fracture reduction to be maintained and the plaster cast was changed to a lightweight below elbow full cast which remained in situ for 6 weeks. Radiographs at 6 weeks demonstrated union of the distal radius fracture but no signs of healing of the ulnar styloid or lunate fractures. Median nerve sensory symptoms had improved. The cast was removed and range of motion exercises begun. An MRI was performed showing a non-united fracture of the lunate without signs of avascular necrosis. The patient is now 6 months post-op and currently asymptomatic with a full painless range of motion. He has returned to his pre-morbid level of function being actively involved in physical education at school and reports no pain in the wrist or functional deficit. Radiographs continue to demonstrate a lunate non-union.

Results and Conclusions: Paediatric lunate fractures are very rare, and as a result there is very little published literature available. Previous case reports have demonstrated good long-term results from both conservative and operative management of paediatric carpal fractures. A case report by Bhatnagar et al. highlighted a good clinical outcome with non-operative treatment of an active 11-year old boy with multiple carpal fractures. They demonstrated asymptomatic full range of motion of the wrist at 3 years follow-up, despite CT at this stage showing non-union of a hamate fracture. Similarly, there have been good clinical outcomes with operative management. Kamano et al. showed effective results in a child with multiple carpal fractures treated with wire fixation followed to twenty-nine months. In 2009, Foley et al. also demonstrated similar outcomes in a 10-year old boy treated with Kirschner wires. In this patient, bone union was achieved and there was pain free full range of movement of the wrist at 1 year follow-up.

In our case, we pursued a conservative approach to management based solely on the patient's symptoms. The questions that however remain are:

- whether this lunate fracture may progress to a delayed union and should we thus follow up the patient until this occurs?
- if union does not occur will this result in long term detriment to wrist function or chronic pain?
- should a delayed ORIF with bone grafting be performed simply to achieve union or should it be performed only in the presence of symptoms?

– should lunate fixation have been performed at the primary operation?

Take home message:

- Paediatric carpal fractures are rare and are commonly missed and possible underestimated.
- No evidence exists on the specific management of paediatric lunate fractures and asymptomatic non-union in these patients.
- No long term studies provide the possible sequelae of carpal fracture non-union in children.
- We present a conservative management approach based on the patient's symptoms which appears successful in the short to mid-term, however we are unable to comment on the long term prognosis.

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Symptomatic steroid induce multifocal diaphyseal bone infarcts treated with intra-medullary nailing

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Introduction: Non traumatic osteonecrosis is the ischaemic death of cellular elements within bone. Etiological factors implicated include long term corticiosteroid use, alcoholism, sickle cell disease, systemic lupus erythematosus, amongst others. Common sites of involvement include the proximal femur, knee, shoulder, ankle. Metaphyseal-diaphyseal lesions have been well described radiolographically, however are commonly considered asymptomatic. There is thus a paucity of literature describing techniques used for symptomatic diaphyseal or metaphyseal lesions not involving the epiphyseal region.

Case description: Our patient is a 40-year-old woman diagnosed with Arnold-Chiari malformation in 2005 who was then surgically treated with foramen magnum decompression. In 2010 she was treated with 4 months of Dexamethasone 2mg for chemical meningitis. She presented to the Orthopaedic outpatient clinic in 2012, 16 months after ceasing steroid medication, with a 6 month history of difficulty walking due to pain in bilateral groins and bilaterally along her shins, left worse than right. MRI of both hips demonstrated anterior serpiginous lesions within the femoral heads consisted with AVN (Ficat II). MRI of lower legs showed isolated bone infarct in the metaphyseal-dyaphyseal region of her tibias bilaterally. She had bilateral total hip arthroplasties with immediate relief of hip symptoms. Our patient underwent bilateral tibial intramedullary nailing using a Stryker T2 nail with a medial parapatellar approach. At both the 6 week and 5 month follow-up she had no further pain, was non tender to palpation and was very satisfied with result.

Results and Conclusions: We are unaware of any reports of the development of symptomatic diaphyseal osteonecrosis in patients receiving corticosteroids for the treatment of meningitis. Much of the literature regarding management of osteonecrosis is focused on the treatment of epiphyseal lesions in the femoral head and around the knee. Diaphyseal lesions have been well described radiologically but are often defined as asymptomatic and clinically insignificant. Our use of intramedullary nailing thus illustrates an effective surgical option for the treatment of symptomatic diaphyseal osteonecrosis.

Take home message: Osteonecrosis must be considered in all patients receiving high dose or long term steroids for any indication. Intramedullary nailing can be a successful method of treating symptomatic diaphyseal osteonecrosis of long bones.

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Transposition of a pancreas transplant from the bladder to the terminal ileum twenty years after combined allogenic kidney-pancreas-transplantation

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Introduction: During the first years of combined allogenic kidney-pancreas-transplantation bladder diversion of the exocrine pancreas secretion was used. After reporting urological and systemic complications it was switched to an enteric diversion with excellent results of pancreas function. Today enteric diversion of the pancreatic ductal secretion is the standard procedure. Nevertheless there are still patients alive with bladder diversion from the early years of transplantation with a good pancreatic function but loss of kidney function. This case describes such a patient and how we dealt with the problem.

Case description: A 53-year old male patient presented with a progressive renal failure twenty years after combined allogenic kidney-pancreas-transplantation with bladder diversion of the exocrine pancreas secretions. Urine excretion was declining with a pre-dialysis renal failure. Still the pancreas transplant was working properly without the need of insulin therapy. We therefore carried out a separation of the graft duodeno-cystostomy and re-established diversion by a side-to-side graft duodenal-recipient ileal anastomosis. This was done by a 2-layer hand sewn technique. Bladder catheter, drainage near the bladder and drainage near the anastomosis were removed after 5, 8 and 10 days respectively. The pancreas showed proper function without the need of insulin therapy. The patient was released from hospital 14 days after the operation.

Results and Conclusions: Transposition of a pancreas transplant from the bladder to the terminal ileum twenty years after primary transplantation is technically possible. In this case it was also reasonable in order to protect the bladder from the aggressive pancreatic ductal secretion. Because of the declining urine excretion due to progressive failure of the kidney transplant the exocrine secretion was not properly diluted anymore with the risk of hematuria, lower urinary tract infections, reflux-associated pancreatitis and transitional cell dysplasia. These conditions could limit the opportunity for the patient for a second kidney donation.

Take home message: Transposition of a pancreas transplant from the bladder to the terminal ileum twenty years after primary transplantation is technically possible and reasonable to offer the patient a chance for a second kidney donation.

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Pancreatic malignancy presenting as duodenal ulcer (D1)

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Introduction: Malignant ulcer at the duodenal bulb is extremely rare. The commonest cause of ulcers here is peptic ulcer disease. Therefore the routine biopsy of ulcer at D1 is not routinely recommended, to avoid complications.