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Pelvic chondrosarcoma presenting as mechanical back pain: two case reports

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Pelvic chondrosarcomas are malignant cartilaginous tumours. They can result in a clinical presentation that is similar to mechanical back pain. Due to their slow growth, chondrosarcomas tend to cause symptoms over a prolonged period of time, and the diagnosis might be delayed. It is important to recognize the clinical indicators of serious disease and obtain the necessary tests to rule out such conditions. In this report, we present two cases of pelvic chondrosarcomas mistaken for mechanical back pain.
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KEY WORDS: pelvic tumour, chondrosarcoma, back pain.

Les chondrosarcomes pelviens sont des chondromes malins. Ils peuvent se présenter cliniquement de manière similaire à des douleurs lombaires mécaniques. À cause de leur croissance lente, les symptômes des chondrosarcomes ont tendance à se manifester sur un grand laps de temps, et le diagnostic peut en être retardé. Il est important de reconnaître les indicateurs cliniques de cette grave affection et d'effectuer les tests nécessaires de façon à exclure la possibilité d'une telle condition. Nous présentons dans cette étude deux cas de chondrosarcomes confondus avec des douleurs lombaires mécaniques.
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MOTS CLÉ : tumeur pelvienne, chondrosarcome, douleur lombaire.

Introduction

Chondrosarcomas are malignant cartilaginous tumours developing in bone preformed by cartilage. They are classified as primary, when arising de novo within a given bone, or secondary, when arising in preexisting cartilaginous lesions like osteochondromas or enchondromas.[1,2,3]

Seventy percent of malignant bone tumours are metastatic in origin, while the remaining thirty percent are primary in nature. The three most common types are myeloma, osteosarcoma and chondrosarcoma respectively. Chondrosarcomas comprise about 10 percent of all primary malignant bone tumours and most frequently occur between the fourth and sixth decades of life.[1,2,3,4] Their most common site of involvement is the pelvis (31%), but they also commonly involve other parts of the axial skeleton like the femur, ribs and proximal humerus. The least common sites of involvement include the spine and appendicular skeleton.[1,2,3,5]

The majority of patients presenting to a chiropractic clinic suffer from low back pain. It is essential to differentiate mechanical from non-mechanical causes of back pain. The symptoms created by chondrosarcoma of the pelvis can easily be mistaken for mechanical back pain as the following two cases will illustrate.

Case reports

Case 1: Mrs. F is a 63-year-old apartment caretaker who was first seen at the Royal University Hospital with left heel pain due to a plantar fascitis. She had a secondary complaint of low back pain that had been worsening over the last month. She had suffered from recurrent back pain for 20 years that had been diagnosed as osteoarthritis and Scheuermann's disease. She attributed the recent increase in severity of the back pain to her limp caused by the heel pain. The pain was present at rest, but more severe when walking. The patient was recommended conservative treatment for her plantar fascitis while the back pain was expected to improve on its own.

The patient was seen again nine months later because of increasing pain in the low back and left hip. Her heel pain had

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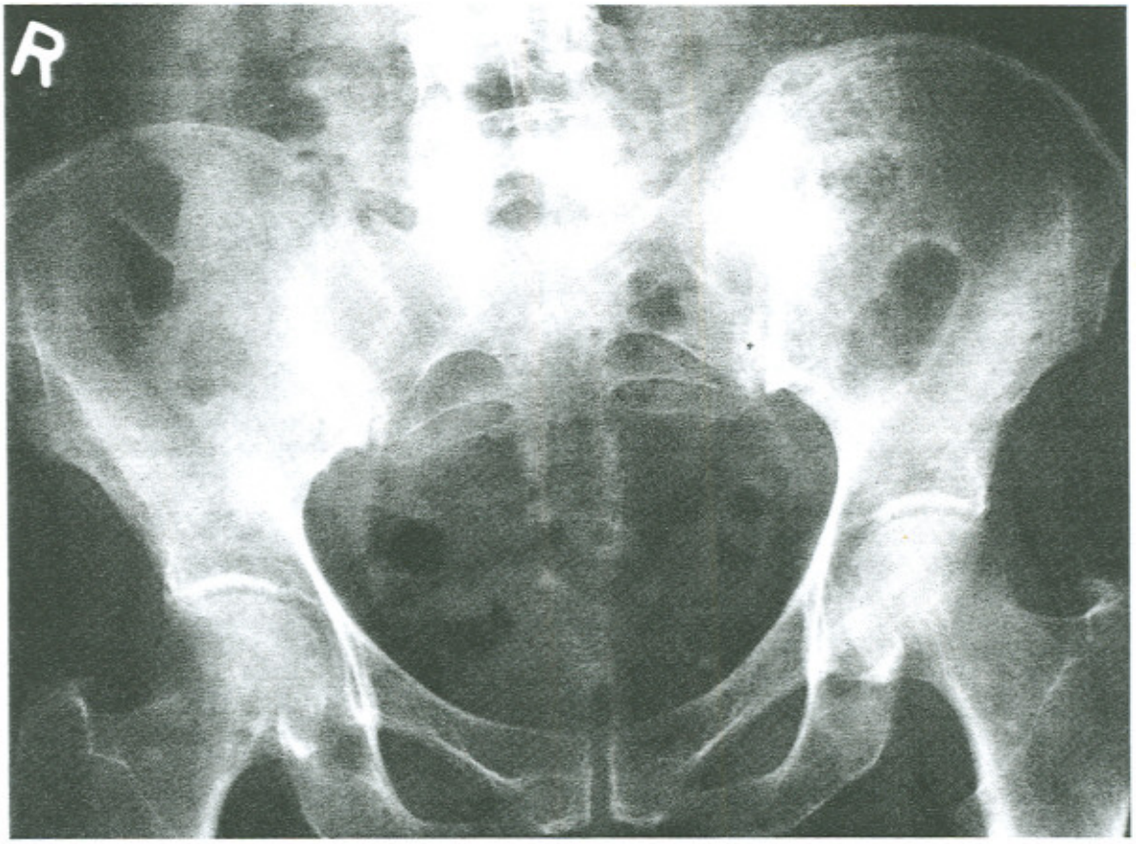

Figure 1. A pelvic radiograph shows a 7 × 8 cm area of mottled sclerosis with ill-defined margins within the left ilium.

not changed and she was otherwise in good general health. On examination, she walked without a limp and had a full and pain free range of motion of the hips and low back. Tenderness was present around the left sacroiliac joint. The examination of the heel was still consistent with a plantar fascitis.

The radiological examination of the pelvis showed a 7 × 8 cm area of mottled sclerosis with ill-defined margins. (Figure 1) A subsequent axial CT scan, obtained through the superior aspect of the pelvis, confirmed the presence of a sclerotic lesion in the medial aspect of the left ilium adjacent to the sacroiliac joint, but not involving the latter. (Figure 2) There was no destruction of the cortex nor soft tissue extension. The main differential diagnoses were chondrosarcoma and metastasis.

Laboratory investigations, including CBC, ESR, calcium and alkaline phosphatase, were normal. The bone scan did not show abnormal uptake of radionuclide in the left ilium, nor anywhere else except over the left heel (plantar fascitis). The patient was also investigated for primary neoplasm in the lung, breast, thyroid, and kidney, but all investigations were normal.

Since the lesion was likely to be a primary chondrosarcoma, a biopsy was recommended. A tumour in the ilium was found infiltrating the bone. The mass was whitish and cartilaginous in nature. The microscopic appearance consisted of a moderately cellular cartilaginous tumour with characteristic binucleated chondrocytes in their lacunae. (Figure 3) Neither mitotic figures nor areas of atypical cellularity were seen. Around the periphery of the lesion, there were areas of new bone formation coupled with areas of cancellous bone destruction. The morphological features of the tumour, together with the radiological findings, were compatible with a diagnosis of grade I chondrosarcoma.

The patient was referred to another centre for surgical resection of the tumour via an internal hemipelvectomy and reconstruction.

Case II: Mr. B. was first seen at the Royal University Hospital Orthopaedic Outpatient Clinic at the age of 27 years. He had been suffering from left-sided lower back pain associated with left anterior thigh weakness and paraesthesia for the past year. He had seen a chiropractor who treated these symptoms for six months without taking a radiograph. This helped his low back pain, but the thigh paraesthesia and weakness progressed. Six months later, the patient went to see his family doctor because he noticed a mass in his left lower abdominal quadrant.

The mass was the size of a softball and appeared fixed to the

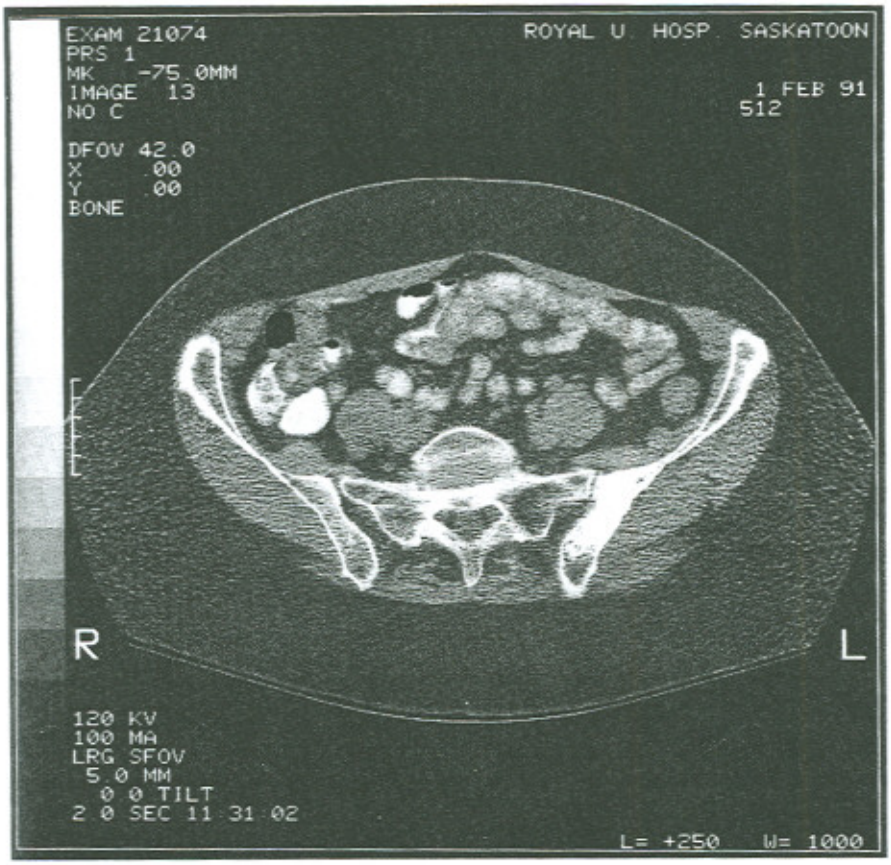

Figure 2. A CT scan shows the sclerotic lesion limited to the left ilium and not involving the sacroiliac joint nor the surrounding soft tissue.

left ilium. There was no bruit over the mass and good pulses were present within the lower limbs. Examination of the left thigh revealed a circumferential decrease of four centimetres associated with weakness of the left hip flexors.

The radiological examination showed a 15 × 15 cm lytic lesion with mottled calcification overlying the left iliac fossa and extending medially and superiorly within the surrounding soft tissue associated with a distended colon. A lumbosacral transitional segment was also present. (Figure 4) At biopsy a 17 × 17 cm mass arising from the left iliac crest was observed. These pathological findings were consistent with a low-grade chondrosarcoma.

Extensive investigations did not reveal any secondary site of involvement, and it was decided to excise the tumour via a hemipelvectomy. The acetabulum was preserved and a bone graft taken from the left tibia was inserted between the sacrum and the acetabulum for support. (Figure 5)

Post-operatively, he did very well. The wound healed without complication and the paraesthesia over the anterior thigh resolved. Six months after surgery, he was able to walk and ready to resume normal activity. No evidence of recurrence was present.

Four years later, Mr. B. was admitted for surgery because of a local recurrence of the tumour. The tumour recurred several times over the following years until the patient died of post-surgical complications following the resection of an enormous tumour mass, 10 years after the initial diagnosis of chondrosarcoma. (Figure 6)

Discussion

Some tumours are difficult to recognize clinically. The pelvic chondrosarcoma may simulate mechanical back pain of sacroiliac origin. This is particularly true if the tumour is close to the sacroiliac joint. These patients commonly present with poorly localized pain and a mass. However, the mass is usually quite large before it is recognized, due to the large amount of space in the pelvic cavity. Futhermore, the diagnosis is complicated by the relatively slow growth of these tumours. The average duration of the symptoms before diagnosis is often a year or more. Kaufman reviewed 42 patients with chondrosarcoma and found that a quarter of these had been symptomatic for two years.[6] Abdominal examination should be part of the normal screening of patients with low back pain.

Since the presentation of chondrosarcoma can be similar to

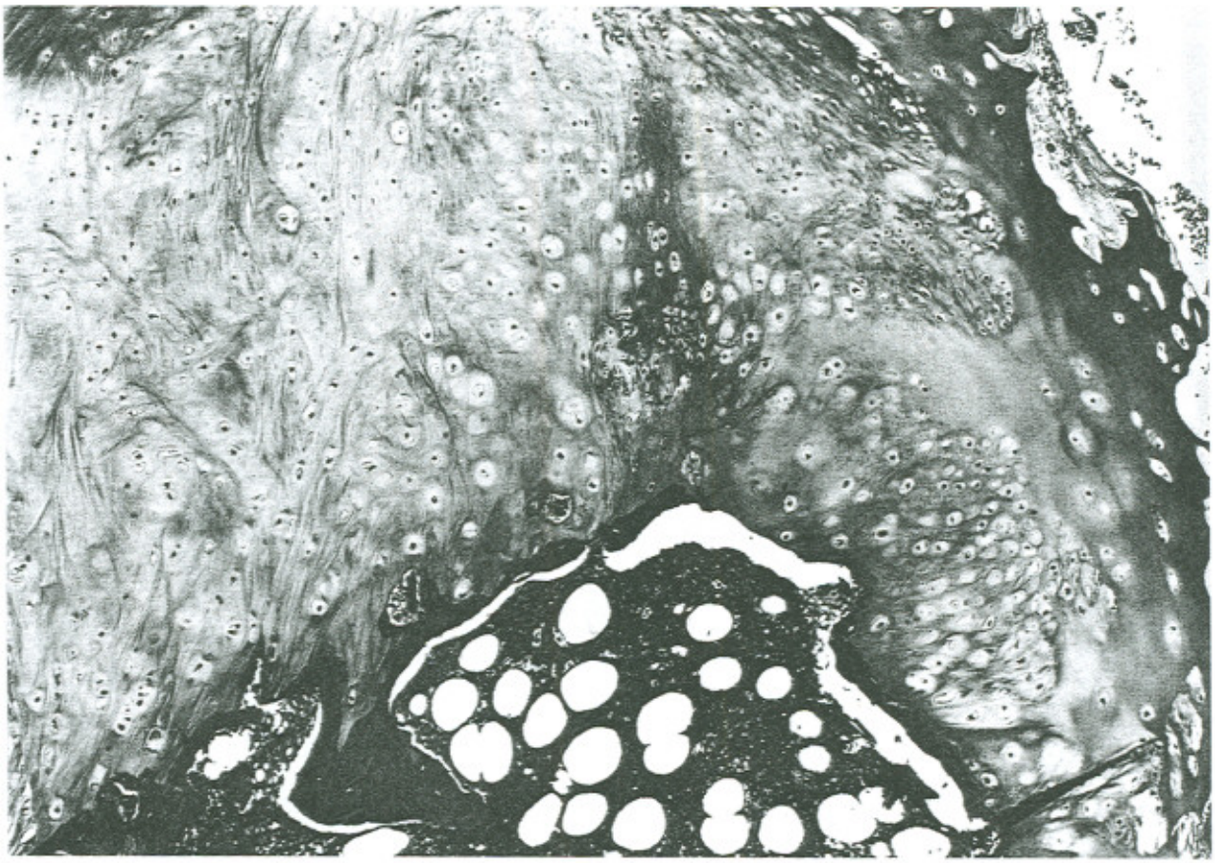

Figure 3. The histological appearance of the grade I chondrosarcoma closely resembles normal hyaline cartilage except for a moderate increase in cellularity and the presence of few binucleated cells within lacunae (H. & E. × 96).

benign causes for backache, it is important to understand the indications for paraclinical testing. The Quebec task force has defined clinical indicators for serious underlying diseases in patients presenting with back pain. Paraclinical tests should be considered if the patient is younger than 20 or older than 50 years of age, has recurrent back pain, fever, neurological deficit, and a history of serious trauma. The patient who is unresponsive to treatment or has a past history of cancer should also be further investigated.[7]

Spinal radiographs are the most common paraclinical tests used by clinicians. In addition, an anteroposterior view of the pelvis should be considered in cases with persistent pain. However, one should not forget that more advanced studies like the myelogram, CT scan, MRI and bone scan might be indicated. Laboratory evaluation including ESR, alkaline phosphatase and serum calcium can also provide additional information. In fact, the ESR can be more sensitive than plane radiographs in the initial diagnosis of spinal cancer.[8]

The radiological appearance of chondrosarcomas can vary according to their location. Pelvic chondrosarcoma usually presents as a large, thick-walled area of radiolucency with trabeculation and central areas of multilobular medullary bone destruction. Foci of calcification can also be seen within the lesion. Cortical destruction with soft tissue infiltration usually develops late.[2]

The gross appearance of the tumour consists of a large, smooth-surfaced, multilobulated lesions, with or without mucoid and central cystic degeneration of the cartilaginous matrix. Numerous areas of calcification can be seen within the lesion.

The histological appearance of the tumour is used to grade the malignant potential. Hence, a grade I chondrosarcoma is characterized by two or more cells within a cartilage lacuna in more than the occasional microscopic field, myxoid and cystic changes, and the presence of cartilage lobules and endochondral ossification. The grade II and III chondrosarcomas are characterized by an increasing amount of cellular atypia, including mitotic figures and binucleated cells, as well as by the presence

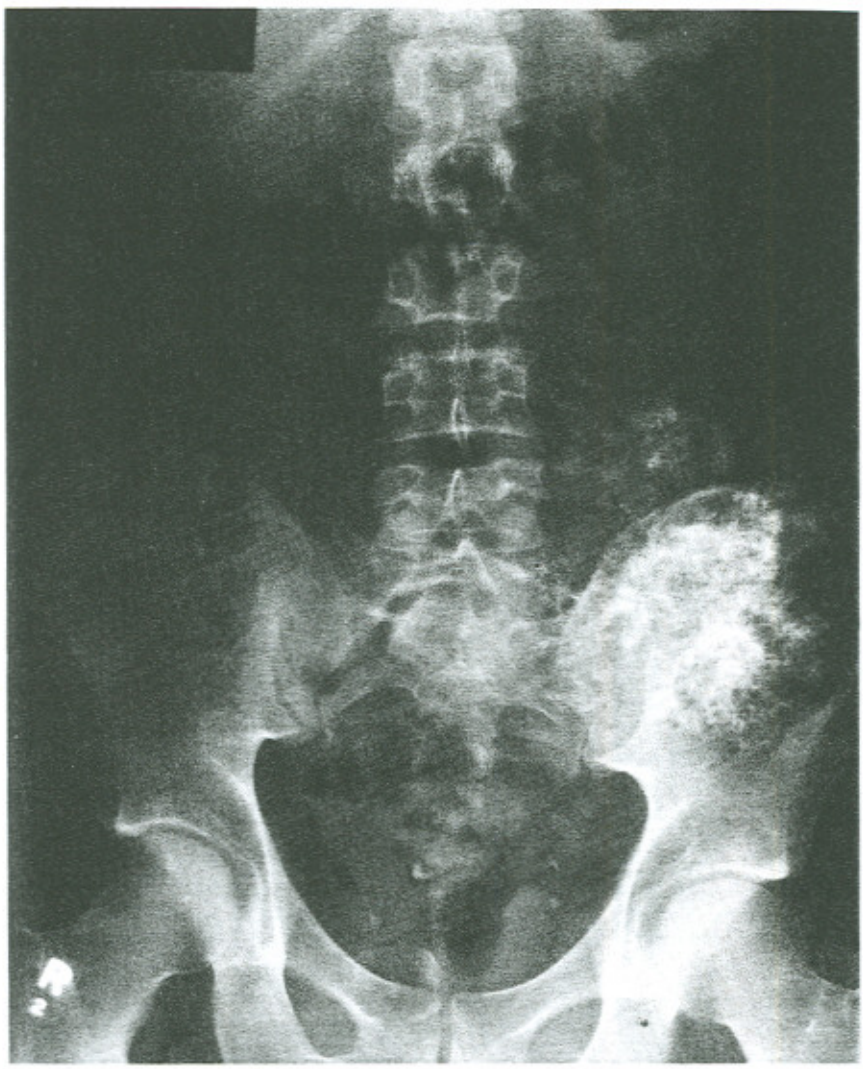

Figure 4. A pelvic radiograph shows a 15 × 15 cm mass in the left iliac fossa with mottled calcification, characteristic of a cartilage-based tumour. There is an increased amount of gas in the colon.

of spindle cell elements. However, benign lesions, like enchondromas, can be mistaken for their malignant counterpart on the basis of histological appearance alone. The measurement of cell DNA content and the consideration of the clinical and radiographic findings will permit a better estimation of the malignant potential.[1,2,5]

Chondrosarcomas do not respond to radiotherapy and routine chemotherapy. Pelvic lesions are usually treated by surgical excision via hemipelvectomy. The main problem with low grade tumours is the local recurrence. However, metastasis, most commonly to the lung, can occur, especially with more aggressive tumours (grade II and III). The five-year survival rate of low-grade chondrosarcoma is 65% to 85%, as opposed to 15% with the highest grade tumours.[1]

Conclusions

Chondrosarcomas are malignant tumours with a predilection for the pelvis. Their presentation may simulate mechanical low back pain. The clinician should be aware of such a possibility in the differential diagnosis of patients presenting with chronic or recurrent back pain.

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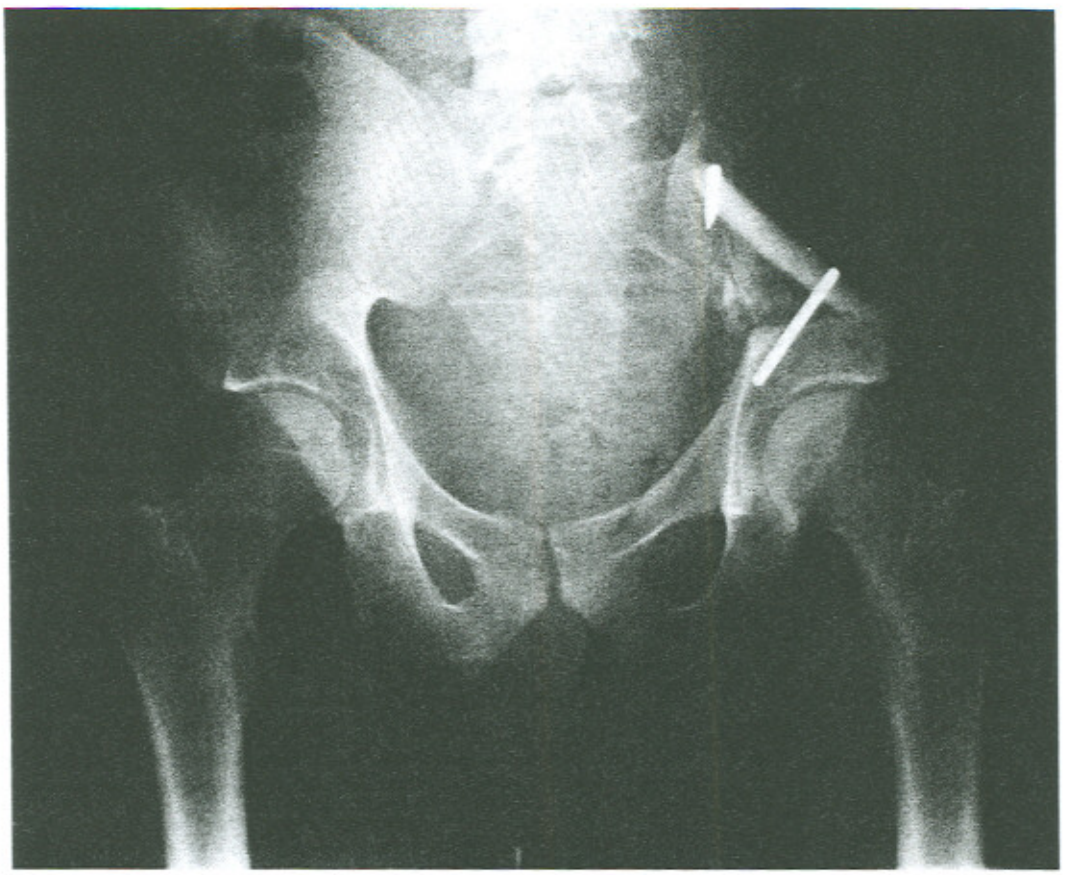

Figure 5. A post-operative radiograph shows the hemipelvectomy with the bone graft connecting the left acetabulum to the sacrum.

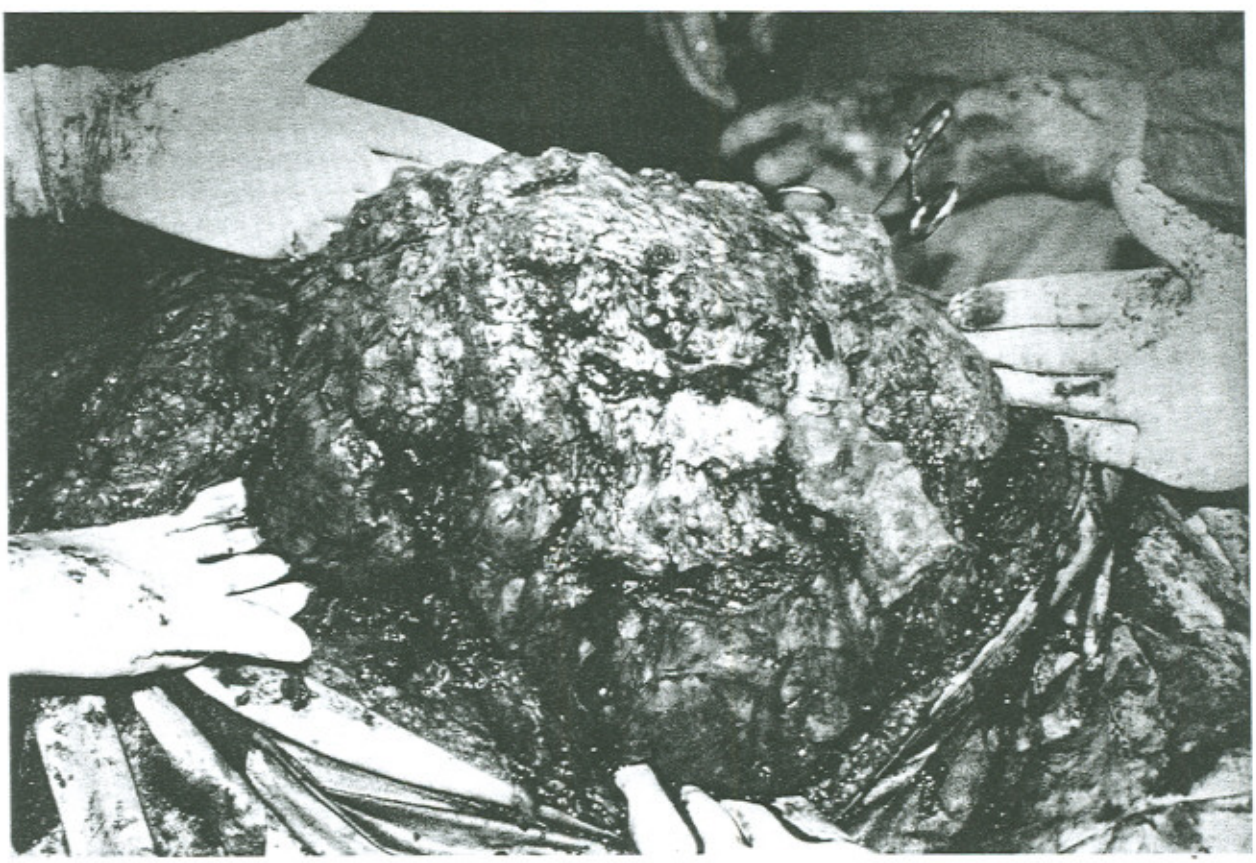

Figure 6. This picture was taken during the last surgical debridement. It shows the enormous size of the local tumour recurrence.

References

1 Healey JH, Lane JM. Chondrosarcoma. Clin Orthop 1986; 204:119–129.
2 Huvos AG. Bone tumours; diagnosis, treatment and prognosis. 2nd ed. Toronto: WB Saunders Company, 1991:343–394.
3 Yochum TR, Rowe LJ. Essentials of skeletal radiology. Los Angeles: Williams & Wilkins, 1987:754–760.
4 Buirski G, Ratliff AHC, Watt L. Cartilage-cell-containing tumours of the pelvis: a radiological review of 40 patients. Br J Radiology 1986; 59:197–204.
5 Marcove RC, Mike V, Hutter RVP, Huvos AG, et al. Chondrosarcoma of the pelvis and upper end of the femur; an analysis of factors influencing survival time in one hundred and thirteen cases. J Bone Joint Surg 1972; 54A:561–572.
6 Kaufman H, Douglass HO, Blake LL, et al. Importance of the initial presentation and treatment upon the survival of patients with chondrosarcoma. Surg, Gyne & Obst 1977; 145:357–363.
7 Spitzer WO, LeBlanc FE, Dupuis M, et al. Scientific approach to the assessment and management of activity-related spinal disorders. Spine 1987; 12:S1–S59.
8 Deyo RA, Diehl AK. Cancer as a cause of back pain: frequency, clinical presentation, and diagnostic strategies. J Gen Intern Med 1988; 3:230–238.