

## CASE REPORT

# ABDOMINAL HERNIA THROUGH A DEFECT IN THE ILIAC BONE AFTER RESECTION OF A CHONDROSARCOMA OF THE PELVIS

E. JUAN-GARCÍA, V. CANALES, A. PEGUERO, A. HERRERA, A. MARTÍNEZ

**Chondrosarcoma is a malignant tumor with, generally, a better prognosis than osteogenic sarcoma ; it usually calls for surgical treatment with a wide margin of resection, in view of its marked resistance to chemo- and radiotherapy, but this may be difficult or impossible in one of its most frequent locations, i.e. the pelvis.**

**Herniation of abdominal contents through a surgical defect in the iliac bone is a rare complication, and is almost always associated with bone graft harvesting from the iliac crest.**

**We present the case of a male patient operated for a chondrosarcoma of the ilium, with wide resection of the tumor. During follow-up in the outpatient department, the existence of a hernia with intestinal contents through the defect created in the ilium was noted.**

**The patient has now been followed for 10 years, and there have been no clinical repercussions of the hernia. No recurrence of the tumoral lesion has been observed.**

**We review the cases published and discuss the treatments recommended.**

**Keywords :** chondrosarcoma ; hernia ; iliac bone.

**Mots-clés :** chondrosarcome ; hernie ; os iliaque.

## INTRODUCTION

Primary chondrosarcomas may be central or peripheral depending on their location in the affected bone ; they represent approximately 13% of malignant bone tumors (1) .

These tumors occur slightly more frequently in men than in women, with an incidence peak

between 30 and 60 years. The most frequent location is in the femur and pelvis ; the first clinical manifestation is usually local pain, which is rarely severe except in case of destruction of the cortex.

Typical signs on radiography are central areas of flecked calcification in the radiolucent zones of tumor destruction (1), which can also expand the thinned cortex or cross it and extend into the peripheral soft tissues in the most aggressive forms. Treatment is basically by surgery ; metastases are rare and occur in advanced stages ; the 10-year survival rate is approximately 40%.

Herniation of the abdominal contents through a surgical defect in the iliac bone is a rare complication, which was described for the first time by Oldfield in 1945. Since then less than 20 cases have been reported as complications after graft harvesting, fractures or debridement for osteomyelitis, and in one case through congenital bone defects (3, 4, 5, 6, 7, 9).

## CASE DESCRIPTION

A 31-year-old male patient, presented with a tumor in the right iliac fossa, evolving over 2 years. The patient showed deformity of the right hemipelvis, in the form of a slowly growing tumor, accompanied by pain when starting to walk and getting up from a sitting position.

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*Fig. 1.* — Plain xray of the pelvis at the time of diagnosis

Physical examination revealed a mass measuring approximately  $7 \times 10$  cm of hard consistency and fixed to the outer surface of the right ilium, occupying the anterior two-thirds of its surface and extending beyond the limit of the iliac crest. It did not adhere to the skin ; no skin alterations were noted.

A plain xray showed a calcified tumor, attached to the external border of the ilium, with no evidence of an osseous pedicle (fig. 1). The CT scan gave a clearer image (fig. 2), as well as an approximation of the type and size of tumor ( $9.5 \times 5.5 \times 7$  cm).

The study was completed with a CT-bone scan and Tc of the lungs in order to rule out the presence of metastases .

Based on a diagnosis of a suspected chondrosarcoma, it was decided to treat the lesion surgically with wide resection of the tumor. We had special attention to the risk to transfer tumoral cells.



*Fig. 2.* — Preoperative CT-scan of the tumor

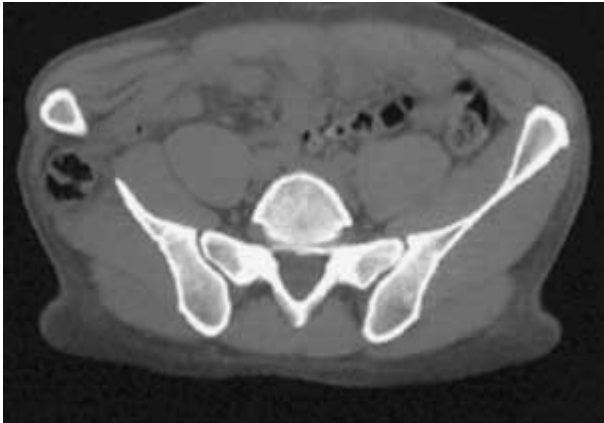


*Fig. 3.* — CT-scan four months after operation

The size of the osseous defect generated in the ilium was  $7 \times 5$  cm, and the approximate size of the piece,  $12 \times 6 \times 5$  cm. Reconstruction of the osseous defect created was done with the peripheral soft tissues, the iliac muscle and the abdominal aponeurosis.

There were no postoperative complications. The pathology report confirmed the diagnosis of a surface well-differentiated chondrosarcoma (Grade IIA according to the Evans classification), as well as the complete resection of the tumor.

During the initial weekly checks with plain radiography and CT-scan, the patient showed no clinical symptoms. However, four months post-operatively, the CT-scan showed a mass of heteroge-



*Fig. 4.* — CT-scan ten years after operation

neous content outside the ilium, compatible with a herniated colon (fig. 3).

Clinical and radiographic checks were continued in the outpatient clinic, and the patient showed no clinical symptoms with regard to his intestines, nor did he report any pain.

The last clinicoradiographic check-up, carried out ten years after the operation, showed no recurrence of the tumor and no evolution of the hernia (fig. 4).

Although surgical treatment of the transiliac hernia has been proposed, the patient has declined.

#### DISCUSSION

The preferred treatment of chondrosarcoma is by surgery, and the indication for extended resection depends not only on the histological grade of malignancy but also on the degree of involvement of the cortex and whether it has extended to neighboring tissues (1).

In low or intermediate grade lesions it is essential to achieve wide margins of resection in order to achieve proper local control of the tumor, as incidences of local recurrence and survival depend on adequate surgical treatment.

In a review of publications on iliac hernias, we have not come across any cases in which the cause was a tumor resection. The appearance of this complication, in cases of fracture, bone graft harvesting or debridement, has been between 24 days (2) and 15 years (10) after creation of the bone defect. In

our patient, it was discovered through radiology four months after operation, without any associated symptoms.

With regard to the clinical aspect, the hernia may present as a soft mass in the defect area with fluctuating volume, and may be accompanied by digestive problems; cases of strangulation (2) and irreducible herniation have been reported (8). On auscultation one can hear intestinal peristalsis. Plain radiography, contrast radiography and CT-scan will show the iliac defect. In the differential diagnosis, local recurrence, soft tissue tumors, abscesses, hematomas or intra-abdominal tumors should be considered.

As regards treatment three possibilities may be considered (4, 9) :

- 1) Mobilization of adjacent soft tissues, such as the abdominal fascia and/or the iliac muscle and reinsertion on the remaining iliac bone.
- 2) The Bosworth technique, based on regularization of the defect through resection of the bone, transposition of the anterosuperior iliac spine to a posterior and distal area and relocation of the abdominal fascia on the iliac crest.
- 3) Closing the defect by means of synthetic meshwork or bone allografts.

Closing the defect by means of bone allografts or synthetic meshwork would be the treatment of choice in our opinion. Mobilization of neighboring structures, in the context of tumor surgery, such as in our patient's case, would be insufficient owing to the extent of the bone defect. In view of the relative frequency of chondrosarcomas in the pelvis, with treatment based almost exclusively on wide resection, we feel that in this type of surgery one should take into account the risk of future hernias through the bone defect created and carry out reconstruction during the same operation.

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### SAMENVATTING

*E. JUAN-GARCÍA, V. CANALES, A. PEGUERO, A. HERRERA, A. MARTÍNEZ. Abdominale hernia door een botdefect van het ilium na brede resectie van een chondrosarcoma.*

Chondrosarcoma, alhoewel prognostisch gunstiger dan osteoogeen sarcoma, is een kwaadaardige tumor die tevens een brede resectie vraagt, temeer omwille van de gekende resistentie aan chemo- en radiotherapie.

Brede resectie kan ingeval van de frekwente localisatie ter hoogte van de pelvis zeer moeilijk of onmogelijk blijken.

Inklemming van de abdominale inhoud doorheen een bot defect in het ilium is zeldzaam en is meestal in deze zone het gevolg van het nemen van botgreffen.

De auteurs brengen het geval van een man, die na brede resectie van chondrosarcoma van het ilium, terug werd gezien met een hernia door het defect met duidelijk intestinale inhoud, en zonder klinische weerslag 10 jaar later. Er trad geen recidief op van de tumor.

De literatuur en de behandeling van de beschreven gevallen worden besproken.

### RÉSUMÉ

*E. JUAN-GARCÍA, V. CANALES, A. PEGUERO, A. HERRERA, A. MARTÍNEZ. Herniation du contenu abdominal à travers un défaut osseux, après résection large d'un chondrosarcome du bassin.*

Le chondrosarcome est une tumeur maligne dont le pronostic est généralement meilleur que celui de l'ostéosarcome ; il réclame habituellement un traitement chirurgical, avec une large marge de résection, étant donné sa résistance à la chimiothérapie et à la radiothérapie, mais cela peut être difficile voire impossible dans une de ses localisations les plus fréquentes, au bassin.

La herniation du contenu abdominal à travers une perte de substance osseuse de l'os iliaque est une complication rare ; elle a presque toujours été décrite en rapport avec une prise de greffe osseuse au niveau de la crête iliaque.

Les auteurs rapportent le cas d'un patient qui a subi une résection large d'un chondrosarcome de l'os iliaque et chez qui, par la suite, a été mise en évidence une herniation du contenu abdominal à travers la perte de substance osseuse au niveau de l'os iliaque. Avec un suivi qui atteint maintenant 10 ans, la hernie n'a eu aucune répercussion clinique. Il n'y a pas eu de récurrence de la tumeur. Les auteurs passent en revue les cas publiés et discutent des traitements possibles.