CASE REPORT

A mountain among molehills: removing an impinging large femoral neck osteochondroma in a man with hereditary multiple exostoses

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SUMMARY

A 31-year-old man with a history of hereditary multiple exostoses (HME) presented with persistent right groin pain and reduced hip range of movement. Examination demonstrated a positive FADIR (flexion, adduction and internal rotation) test suggesting femoroacetabular impingement (FAI). Investigations showed multiple sessile osteochondromata of the right femur with a dominant anterolateral femoral neck osteochondroma causing flexion block. The patient underwent an uncomplicated proximal femoral exostectomy. Six-week postoperative pain, range of movement and daily activity had greatly improved. This case highlights that even in the setting of multiple osteochondromata, excellent impingement relief can be achieved following selective proximal femoral exostectomy.

BACKGROUND

Hereditary multiple exostoses (HME) is an inherited condition of multiple osteochondroma. As well as altered cosmesis, pain and rare potential for malignant conversion, juxtaarticular osteochondromata can impair the range of movement and mobility. We report the case of a 31-year-old man with a history of HME who presented with femoroacetabular impingement (FAI) due to a single, large osteochondroma of the proximal femur. The patient had excellent relief of impingement symptoms following exostectomy of an osteochondroma of the femoral neck.

CASE PRESENTATION

A 31-year-old man presented with a history of severe HME and increasing right groin pain

exacerbated by flexion. Osteochondromata were present at multiple sites throughout the skeleton; however, none had required surgical attention to date.

The right hip range of movement (ROM) was limited to 60° flexion, 5° external rotation (ER) and 0° internal rotation (IR). Extension, abduction and adduction were normal. FADIR (flexion, adduction and internal rotation) test was positive, indicating the presence of hip impingement. FABER (flexion, abduction and external rotation) test was negative. Contralateral hip ROM was 90° flexion, 5° ER, 5° IR with normal extension, abduction and adduction.

The patient reported significant limitations in his activities of daily living with particular trouble climbing stairs, walking long distances and carrying out his work. Preoperative right Harris Hip Score was 44.775.¹

INVESTIGATIONS

The pelvic radiograph showed multiple osteochondromata of the proximal femur (figure 1A). The Dunn lateral radiograph showed a dominant anterolateral femoral neck osteochondroma (figure 1B). There was a large supra-acetabular notch corresponding to impaction from the offending osteochondroma.

TREATMENT

Joint preserving selective exostectomy of the dominant femoral neck osteochondroma was the treatment preferred by patient and physician. Joint arthroplasty was excluded.

Figure 1 Preoperative (A and B) radiographs highlighting dominant osteochondroma causing femoroacetabular impingement and postoperative (C) radiographs showing the resected area.

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Figure 2 Proximal femur viewed intraoperatively before (A), during (B) and following exostectomy with a reshaped femoral neck in view (C).

At surgery, exposure was achieved via a Smith-Petersen anterior approach. The femoral neck osteochondroma was osteotomised at the base (figure 2A–C). Femoral head-neck offset was restored and intraoperative dynamic evaluation confirmed the elimination of impingement. The procedure and postoperative course were uncomplicated. The patient went home 1 day postoperatively.

OUTCOME AND FOLLOW-UP

A 6-week postoperative review in the outpatient department showed hip flexion had improved to 110°. ER and IR improved to 30° and 10°, respectively. Harris Hip Score was 83.025. Pain, distance walked and sitting comfort had considerably improved. The postoperative radiograph showed restoration of femoral head-neck offset (figure 1C). The histology was typical for osteochondroma (figure 3).

DISCUSSION

Although one previous study has described the treatment of FAI due to solitary osteochondroma,² this case serves to highlight proximal femoral osteotomy as a viable treatment for FAI in the setting of HME.

Osteochondroma is a cartilage-capped bony projection arising on the external surface of bone containing a marrow cavity continuous with the underlying bone.³ Osteochondroma represents the most common benign tumour of bone.⁴ Approximately 15% of patients present with multiple lesions as part of HME.⁵ Hereditary multiple osteochondroma is inherited by an

autosomal dominant pattern via Exostosin 1 and 2 genes (EXT-1 and 2).⁶ Patients present with multiple bony overgrowths that can occur anywhere on the skeleton, most commonly on long bones.⁵ The risk of malignant transformation is between 1% and 2% for solitary lesions and is higher in HME.³

FAI as a credible cause for hip pain is gaining popularity among physicians. FAI is due to an abnormal structural relationship between the femoral head and the acetabulum. It is a loss of femoral head-neck offset (cam lesion), focal or global acetabular overcoverage (pincer-type lesion) or combined impingement deformity.⁷ Surgical hip dislocation, labral debridement, osteochondroplasty, total hip arthroplasty and a variety of conservative measures have been described to treat FAI.⁸

Although a variety of treatment options for FAI and osteochondromata have been described in isolation, this case combines two pathologies. The selective exostectomy represents a less invasive procedure that deals adequately with the mechanical problem.

We conclude that patients with specific mechanical symptoms due to large proximal femoral osteochondroma should be offered surgical treatment with a selective exostectomy despite the presence of multiple adjacent lesions.

Learning points

- ▶ Osteochondroma is the commonest benign tumour of the bone and may present as part of hereditary multiple exostoses.
- ▶ Patients with multiple osteochondromata may benefit from excision of femoroacetabular impinging osteochondroma.
- ▶ Excision of femoroacetabular impinging osteochondromata improves the hip range of movement and the patient-reported outcome measures.

Contributors CWR, FER and KJM were involved in the development of the concept for the article. CWR and SCO were responsible for the writing of the manuscript and the data collection. FER and KJM were responsible for review of the manuscript.

Competing interests None.

Patient consent Obtained.

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Figure 3 Histology showing typical appearance for benign osteochondroma—bland diffuse proliferation of cartilage (maximum depth 10 mm), with endochondral ossification at the base of the hyaline cartilage cap.

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