INTRODUCTION:
Femoro-acetabular (FAI) impingement is increasingly recognised as a cause of hip pain and later, progressive degeneration of the hip. FAI may occur as a single entity or as part of a complex hip problem. FAI can be treated by open surgery including surgical dislocation with trochanteric flip osteotomy as pioneered by the Berne group. Trochanteric flip with surgical dislocation offers the ability to treat intra-articular pathology in a number of hip conditions. The aim of this study was to examine whether trochanteric flip and surgical dislocation can safely be undertaken to treat simple FAI and complex hip problems.

METHODS:
Trochanteric flip was undertaken by one surgeon on 36 hips (34 patients) and surgical dislocation in 35 of these hips between 1999 and 2008. Six of these hips (6 patients) had complex hip problems and had additional femoral or acetabular osteotomies. Twenty nine hips (27 patients) had surgical dislocation with or without trochanteric advancement and pseudo neck lengthening. This group consisted of 20 males and 7 females. The median age of patients at surgery was 30 years (range 15-46 years). Median follow-up was two years (range 1-9 years).

The surgical technique, as described by Ganz, involves a posterolateral approach at the interval between gluteus maximus and medius, so preserving the nerve supply to all of gluteus maximus. The trochanteric flip is an extra-articular approach as described by Ganz. The osteotomy now includes a Z osteotomy and an anterior ridge if the trochanteric bed is not to be partially excised nor the trochanter advanced. The arthrotomy is through an anterior approach. Femoral neck bone is excised using templates to guide the amount of excision. The labral lesions are repaired. Neck pseudo lengthening and neck osteotomy require mobilisation of the vascular bundle supplying the majority of the femoral head. Internal fixation of the trochanteric flip is with screws. Concomitant intertrochanteric osteotomy, neck osteotomy or derotation osteotomy is undertaken. Additional periacetabular osteotomy is done either at the same surgery or as a staged procedure.

Patients were clinically and radiographically assessed preoperatively and then postoperatively at the time of the follow-up visits. Doctor and patient questionnaires were completed to derive the Harris hip score, WOMAC and other measures of activity restriction. The complications were prospectively monitored. Preoperative and postoperative radiographic evaluations were undertaken on an anteroposterior pelvic (figure 1) and on cross table lateral views.

RESULTS
The median Harris hip score pre-operatively was 53 (27-91) and patient pain score was 10 (0-40). At latest review, the median Harris hip score was 69 (25-97) (figure 2) and patient pain score was 20 (10-44). Three hips showed radiographic signs of progression of osteoarthritis and, as a result, have been revised to a total hip arthroplasty. Two hips have undergone repeat surgical dislocation. Five hips had minor screw removal. One hip had a partial fracture/avulsion of part of the greater trochanter requiring re-fixation. No hips suffered osteonecrosis nor fracture of neck of femur.

DISCUSSION:
For FAI, trochanteric flip and surgical dislocation allow safe and comprehensive treatment of femoral and acetabular pathology, including labral reattachment. In addition, trochanteric advancement and pseudo neck lengthening can be achieved. Contraindications include cases with OA Tonnis Grade 2 or cases with OA Grade 1 with any joint narrowing. Poorer results have been reported with labral excision versus labral repair. Preoperatively MRI is now used to exclude major cartilage damage. Dysplasia was not treated by surgical dislocation but was treated by acetabular osteotomy and the labrum retained. In complex hip reconstructive surgery, surgical dislocation complements femoral intertrochanteric and femoral neck osteotomies as well as periacetabular osteotomy. Importantly, the major complications of avascular necrosis, articular cartilage damage and femoral neck fracture did not occur.

REFERENCES: