A new capsuloplasty technique in open reduction of developmental dislocation of the hip

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A meticulous capsuloplasty is needed to maintain concentric reduction in the surgical treatment of developmental dysplasia of the hip (DDH). The authors present a new capsuloplasty technique that was named as 'reverse U-shaped capsuloplasty'. It was performed in 72 dislocated hips of 62 children with a mean age of 2.7 years. The reverse U-shaped flap, created in the redundant superolateral capsule was turned downwards, advanced medially, anteriorly and inferiorly and brought over the anteroinferior capsular incision. After a mean follow-up period of 3 years there was neither redislocation nor restriction of the hip joint motion in any hips. J Pediatr Orthop B 00:000–000 © 2003 Lippincott Williams & Wilkins.

Introduction

Redislocation is one of the major treatment complications in developmental dislocation of the hip (DDH). The stability of open reduction depends on several factors and one of them is the adequate strength of the hip joint capsule. A careful capsuloplasty following open reduction is considered one of the most important surgical steps for maintenance of the concentric reduction of the femoral head in the acetabulum [1,2].

There are some well-known capsuloplasty techniques in the surgical treatment of DDH. A T-shaped capsular incision seems to be the most widely used incision technique. This type of incision creates two triangular flaps. In one T-shaped capsuloplasty technique, the superolateral triangular capsular flap is sutured to superior ramus of the pubis and the inferior flap is brought up and sutured over the previously sutured superolateral flap. Also, if necessary, excessive parts of the superolateral flap may be excised [1]. In another T-shaped capsuloplasty technique, of the two triangular flaps, the superolateral one is routinely excised and the inferomedial flap is pulled medially and sutured to the peristeum of the pubis and the anterior inferior iliac spine [3]. In V-shaped capsuloplasty, a V-shaped capsular flap is created at the redundant superior and lateral part of the capsule and following open reduction it is advanced and sutured to close the capsule [2].

The aim of this study was to present the authors’ initial experience with a new capsuloplasty technique named as ‘reverse U-shaped capsuloplasty’.

Patients and methods

The new capsuloplasty technique was performed in 72 hips of 62 children having unilateral or bilateral developmental dislocation of the hip. Age at operation ranged from 1.5 to 9 years with a mean of 2.7 years. All the hips were completely dislocated hips. Children with teratologic or neuromuscular hip dislocations were not included in the study. All the operations were performed by the same surgeon (A.E.). Besides open reduction, Salter’s innominate osteotomy [4] alone or combined with proximal femoral derotation and shortening osteotomy was performed.

Capsuloplasty technique

The capsular incision is parallel to the anterior and lateral margins of the acetabulum and a 5–7 mm wide bim of the medial capsule is left. The incision is continued from the most superior part of the incision to create a 2.5–3 cm long and 1–1.5 cm wide reverse U-shaped flap in the redundant superolateral capsule (Fig. 1). Open reduction is performed through this capsular incision. After reducing the femoral head in the acetabulum, the reverse U-shaped flap is held tightly by a clamp, turned downwards, advanced medially, anteriorly and inferiorly and brought over the anteroinferior part of the incision which is still open (Fig. 2). Redundant parts of the flap are excised to fit the shape of the flap into the open part of the anteroinferior capsule. The superior part of the capsular incision is first brought together and then firmly sutured. Following tight closure of the superior part of the capsule, the medial and lateral edges of the prepared reverse U-shaped flap are sutured tightly to the medial and lateral edges of the anteroinferior capsular incision. (Fig. 3).
Results
The mean follow-up period of the hips was 3 years (range 1–10). Redislocation was not observed in any case. At the latest follow-up, the range of motion was within normal limits in all hips.

Discussion
According to the authors’ previous experience with the mentioned capsular plication technique [1], an anteroinferior capsular defect, due to both the stretched inferomedial capsule and the presence of the femoral head in the acetabulum following open reduction, may be encountered, especially in highly dislocated hips of children over 3 years of age. The presented technique provides a complete anteroinferior capsule closure by using the reverse U-shaped flap without any fold and thickening and gives an adequate tension to the superolateral part of the capsule by advancing the flap medially, anteriorly and inferiorly in all dislocated hips.

In both types of T-shaped capsuloplasties [1,3] the risk of further thickening of the anterior part of the capsule seems to be present due to capsular plication. As a result of coverage of the anterior part of the femoral head with a thick fibrous tissue, limitation in the range of hip joint motion may be seen. In V-shaped capsuloplasty [2], after advancing the V-shaped flap, a fold in the lateral capsule exists and it may not be always possible to close the incised anteroinferior part of the capsule by this flap especially in highly dislocated hips.

We conclude that the presented capsuloplasty technique is a practical alternative to other capsuloplasty techni-
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References


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