

Hip Dislocation Prevention In Obese Patients: Dual Mobility Liner And Constrained Liners Versus Preoperative Bariatric Surgery

Orthopaedics / Pelvis, Hip & Femur / Joint Replacement - Primary

Philippe Hernigou, Charles Henri Flouzat Lachaniette

Hospital henri Mondor, Creteil, France

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Introduction

Obesity, BMI greater than 30 kg/m², is recognized as an independent risk factor for post-operative hip dislocation in several studies. Bariatric surgery is an option for morbidly obese THA candidates. However, no study has evaluated the influence of bariatric surgery prior THA on the risk of dislocation. Double-mobility (DM) acetabular cups or constrained cups prevent dislocation. However, studies up to now have not specifically analyzed the benefit of using these implants in obese patients.

Objectives

We specifically asked: (1) what is the cumulative risk of dislocation in obese patients after THA as compared with non-obese patients? (2) Does bariatric surgery before undergoing THA decrease dislocation's risk in obese patients? (3) Are dual mobility and constrained liner efficient in obese patients?

Methods

Four cohorts were defined using BMI, bariatric surgery, implants (standard, dual mobility, retentive cups) as criteria of selection: Group 1 consisted of all the 200 THA in patients operated between 1990 and 2000 defined as obese (BMI > 30 kg/m² on the day of surgery) and receiving standard implants; Group 2 consisted of 600 THA (matched with THA of Group 1) in patients operated between 1990 and 2000 and defined as non-obese (BMI < 30 kg/m² on the day of surgery) and receiving standard implants; Group 3 consisted of 85 THA performed between 2000 and 2010 in patients defined as previous obese (BMI > 30 kg/m²) patients having bariatric surgery prior THA (with reduction of BMI < 30 kg/m² on the day of surgery and receiving standard implants; Group 4 consisted of obese patients who received between 2000 and 2010 dual mobility (85 THA) or constrained liners (130 implants) without bariatric surgery (109 patients) prior THA (BMI > 30 kg/m²) or with bariatric surgery (79 patients) prior THA (BMI < 30 kg/m²). The four groups had similar pre-operative data, namely, age, gender, aetiology, comorbidities (ASA score), Devane activity scale and autonomy (Parker and Katz-ADL). The four groups were similar in terms of surgical approach, size of acetabular cup.

Results

With standard liners more hips in obese patients dislocated than did hips in non-obese patients (18% compared with 2% odds ratio [OR], 17.5; 95% confidence interval [CI], 2.3363-130.9100; p = 0.005). Revision (8%) for recurrent dislocation was increased in obese patients.

Bariatric surgery performed before THA did not decrease the risk of dislocation in

obese patients. With the same standard liners more hips after bariatric surgery dislocated than did hips in obese patients without pre-operative bariatric surgery (20% compared with 18% $p = 0.5$).

The hips of obese patients receiving constrained liner or dual mobility cup demonstrated a significant reduction in the number of dislocations (respectively, 2% and 1%; odds ratio, 3.82; $p < 0.001$) in absence and presence of bariatric surgery prior THA when compared with the standard cups in obese patients.

Conclusions

Hypotheses for increase dislocation are probably different body mechanics in patients with higher BMI: fatty tissue volume in the thigh and bottom acting as a fulcrum pivot for dislocation; suboptimal implant position due to higher BMI. Reduction of BMI with bariatric surgery resulted probably in an increased soft-tissue laxity and was associated with paradoxical increase of dislocation. Therefore, bariatric surgery did not prevent the risk of dislocation with standard liners. Dual mobility or constrained liners in these obese patients is an effective technique to prevent post operative hip dislocation.