



A painful problem : trochanteric bursitis following total hip arthroplasty

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The aim of the study is to investigate the incidence of trochanteric bursitis post total hip arthroplasty and to examine for a causative association with change in offset, lateralisation and leg length discrepancy occurring post total hip arthroplasty.

A retrospective study was performed on 200 consecutive total hip arthroplasties performed by a single surgeon. Patients were evaluated using a comprehensive total hip arthroplasty database, clinical notes and radiographic imaging. The incidence of symptomatic trochanteric bursitis requiring corticosteroid injection in this patient cohort was calculated. Radiographic analysis was performed for affected patients and a control group of unaffected patients. The incidence of symptomatic trochanteric bursitis requiring corticosteroid injection was 7%. There was no statistically significant difference in radiographic parameters between the two groups.

Trochanteric bursitis post total hip arthroplasty is a poorly understood clinical entity, but one with a significant negative impact on outcome post THA. The incidence of trochanteric bursitis requiring corticosteroid injection in this study was 7%, making it one of the most common complications post total hip arthroplasty.

Keywords : Total hip arthroplasty ; trochanteric bursitis ; offset ; lateralisation ; leg length.

INTRODUCTION

Trochanteric bursitis is a common pathologic entity, typically presenting with pain and repro-

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ducible tenderness in the region of the greater trochanter, buttock, or lateral thigh. It is one of the main clinical entities which falls under the umbrella term of Greater Trochanteric Pain Syndrome (GTPS) (12). Lateral trochanteric pain is a well-documented complication post total hip arthroplasty (THA). The reported incidence of this complication ranges from 4% to 17%, with higher rates documented using direct lateral approach as compared to a posterior approach (5,7,14).

The association between THA and the development of trochanteric bursitis is not well understood. Recent studies have suggested that the primary pathology underlying trochanteric bursitis is actually tendinosis of the gluteus medius and/or minimus tendons (1). In the THA population, it is postulated that change to the natural offset, leg length and/or lateralisation may contribute to the development of trochanteric bursitis by altering natural soft tissue tension. An alternative hypothesis is that post-surgical scar tissue formation in the area may contribute (5).

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Trochanteric bursitis in of itself, appears to confer levels of disability and quality of life similar to levels associated with end stage hip OA (6). The occurrence of this complication post THA has been shown to have a significant negative effect on patient satisfaction post procedure. Patients who develop lateral trochanteric pain post THA have been shown to have a lower overall improvement in Harris Hip Scores (15).

The aims of this retrospective study were to firstly document the true incidence of trochanteric bursitis post THA. Secondly, the change between pre and post-operative offset, lateralisation and leg length discrepancy, were examined as possible causative factors, for post THA trochanteric bursitis.

METHODS

Two hundred consecutive primary total hip arthroplasties were performed from January 2013 to October 2015 at the reporting institution, by a single surgeon, using an antero-lateral approach. Patients were retrospectively evaluated using a comprehensive THA database and clinical notes. Demographics, operative and post-operative details were recorded.

Data recorded for all patients included age, sex, and cementation.

The diagnosis of trochanteric bursitis was made clinically based on the Rasmussen and Fano Criteria, which requires lateral hip pain and tenderness on palpation of the greater trochanter, together with either pain at extreme hip rotation, abduction or adduction, pseudoradiculopathy or pain on forced hip abduction (3).

For patients who required corticosteroid injection for trochanteric bursitis, the time to onset of symptoms, the response to injection and the need for repeat injection was recorded. Radiographic analysis was performed for affected patients and a control group of unaffected patients. The study examined standard preoperative and postoperative anteroposterior pelvis films to measure offset, leg lengths and lateralisation. Lateralisation was measured as the distance from the centre of the femoral head to the medial teardrop (5,7). The femoral offset was measured as the perpendicular

Table 1. — Radiographic measurements

Post-op change (mm)	Affected	Control
Offset	1.31 +/- 8.12	1.75 +/- 6.78
Lateralisation	1.31 +/- 5.17	2.23 +/- 6.03
Leg length	1.85 +/- 10.67	1.69 +/- 9.78

distance from a line drawn down the centre of the femoral shaft to the centre of rotation of the femoral head (8). Limb length was measured as the distance between a line drawn parallel to the most inferior point of the ischium and a second line through the lesser trochanters (2).

In order to assess the impact of change in offset, lateralisation and leg length discrepancy, the change between pre and post op measurements in affected patients and again, in a control group of unaffected patients was recorded. A means comparison test was performed, to assess if there was a statistically significant difference between the symptomatic and control groups, with regards to change in offset, lateralisation and leg length post-operatively.

RESULTS

From January 2013 to November 2015, 200 consecutive total hip arthroplasties were performed by a single surgeon (JQ). One hundred and twenty two (61%) arthroplasties were performed with cement and 78 were performed without cement (39%). Three cases were conversion THA from previous Dynamic Hip Screws (DHS). Four cases were primary THA performed for displaced fracture neck of femur in patients under 65 years of age. All other cases were primary THA for osteoarthritis. Ninety nine patients were female (49.5%) and 101 male (50.5%). The average age of patients was 63.3 years +/- 13.5 with a range of 28 to 86. The follow up for patients ranged between 15 to 48 months.

The incidence of symptomatic trochanteric bursitis requiring injection in this series was 7%.

Of the affected patients requiring injection, 6 were male and 8 female. The average age of affected patients was 65 years +/-11.8, range 47-83. The average time from surgery to documented onset of symptoms was 7.9 months +/-4.7 (range 2-20 months). Injection was performed using Marcaine 0.5% and 80mg Depo-Medrone

(methylprednisolone) injected at the point of maximum tenderness.

Thirteen out of fourteen patients (93%) who received an injection reported improvement in their symptoms. Seven patients (50%) had complete resolution of their symptoms and did not receive any further injections in the follow up period. Five patients (36%) reported an improvement in their symptoms which was either partial or temporary and underwent repeat injection. Of these five patients who underwent repeat injections, one had complete response on second injection. The four remaining patients did not respond and underwent further investigation for their symptoms. The type of investigation requested was based on clinical history and examination.

One patient had an MRI pelvis to further investigate the cause of pain and was found to have tendinosis of the gluteal tendons with multiple foci of heterotopic ossification in both gluteus medius and minimus tendons. He had a repeat injection and is awaiting further clinical review. One patient went on to have an MRI lumbar spine which confirmed an L3/L4 posterior disc bulge which may have contributed to symptoms and was referred to a spinal surgeon for assessment. Another patient in this category was further investigated with an MRI spine which showed T10/11 facet joint osteoarthritis which was not thought to be clinically significant. This patient underwent a repeat injection and is awaiting further review. The final patient in this category had extensive investigation which included MRI lumbar spine and bone scan. No evidence of gluteal tendinopathy or spinal pathology was found. This patient did not respond to repeat injection and was subsequently referred to a pain specialist.

In symptomatic patients the mean (+/- standard deviation) change in offset postoperatively was 1.31+/-8.12mm compared to 1.75+/-6.78mm in the control group, whilst mean comparison test shows the difference was not statistically significant at 1.043(CI -3.00-9.16 P=0.31). In the symptomatic group, the mean change in lateralisation post-op was 1.31+/-5.17mm and in the control group was 2.23+/-6.03mm, with a means comparison test showing again, that any change recorded was not statistically significant with a difference of 1.61(CI -1.01-8.09

P=0.12). Finally, there was minimal difference in leg length change between the symptomatic and control groups with measurements of 1.85+/-10.67mm and 1.69+/-9.78mm respectively. This did not show a significant statistical difference at -0.01(CI -8.45-8.13 P=0.97).

DISCUSSION

Trochanteric bursitis, also known as lateral trochanteric pain (LTP), is a recognised complication of total hip arthroplasty. The incidence of this condition post THA is reported to range from 4% to 17% (5,7,14). The incidence has been shown to be higher with the direct lateral approach as compared to the posterior approach³. This study found that the incidence of symptomatic trochanteric bursitis requiring corticosteroid injection in a cohort of patients who underwent THA to be 5.5%, with an overall incidence of 8.5%.

The association between THA and trochanteric bursitis has not been extensively studied. It is postulated that factors such as post-surgical scar tissue formation in the region, abductor muscle insufficiency post operatively, overtightening of soft tissues in an effort to enhance stability post THA, may be predisposing factors to this condition in the THA population (5,7,14). Recent studies have suggested that the primary pathology underlying trochanteric bursitis or lateral trochanteric pain is actually tendinosis of the gluteus medius and/or minimus tendons (1). Bird et al reported 20 of 24 patients with a definitive diagnosis of trochanteric bursitis had either abnormal signal at the insertion of gluteus medius or had a frank tear at the musculotendinous junction, while only 2 had true trochanteric bursal distension (2). In this study, only one patient had an MRI pelvis for further investigation of his symptoms. The MRI confirmed tendinosis of the gluteal tendons, in keeping with the findings of Bird et al. This study suggests that change in offset, lateralisation or leg lengths, does not influence those who would become symptomatic post THA.

The diagnosis of trochanteric bursitis is typically clinical, and based on a complaint of lateral trochanteric hip pain combined with physical examination findings of tenderness on palpation of the

lateral aspect of the greater trochanter and pain on resisted hip abduction (3,9,11). The treatment of trochanteric bursitis is predominantly non operative, consisting initially of physical therapy and oral NSAIDS, followed by greater trochanteric corticosteroid injection for persistent symptoms. There were 17 patients in total who reported symptoms of trochanteric bursitis in our cohort. Six patients responded to conservative treatment with physiotherapy programmes, abductor strengthening exercises, and oral analgesia. Eleven patients in this study went on to require injection. The response to this treatment is reported as between 80%-100% (3-4,11,13). The response rate in this study was 90%.

A failure to respond to corticosteroid injection should prompt consideration for other causes for pain. The causes of "pseudo trochanteric bursitis" include L2, L3 radiculopathy, entrapment neuropathies and lumbar facet syndrome with referred pain (4). In this study, one patient who had return of symptoms post injection was further investigated with an MRI spine and was found to have a disc at L3/4 level which may have been a contributing factor to pain. Trochanteric bursitis post THA has been shown to have a significant effect on patient satisfaction post procedure. Patients who develop lateral trochanteric pain post THA show a lower overall improvement in Harris Hip Scores (15).

The main limitation of this study was the follow up duration. Follow up ranged from 6-39 months, with a mean follow up of 22 months \pm 9.26. While the average time from THA to onset of symptoms in this study was 7 months, the average time reported in the literature was 19 months (12). This would suggest that there may be cases yet to present in this patient cohort.

It is the opinion of the authors, that given its incidence of 8.5% in this study, specific counselling pre-operatively with regards to trochanteric bursitis as a complication post THA, should form a specific section of the consenting process.

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