

## Trochanteric area pain, the result of a quartet of bursal inflammation

Bruce Rothschild

Bruce Rothschild, Department of Medicine, Northeast Ohio Medical University, Rootstown, OH 44272, United States  
Bruce Rothschild, Biodiversity Institute, University of Kansas, Lawrence, KS 66045, United States

Author contributions: Rothschild B solely contributed to this paper.

Correspondence to: Bruce Rothschild, Professor, Department of Medicine, Northeast Ohio Medical University, 4209 State Route 44, Rootstown, OH 44272, United States. [bmr@ku.edu](mailto:bmr@ku.edu)  
Telephone: +1-785-6151523 Fax: +1-785-5942691

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### Abstract

Bursitis is quite responsive to therapeutic intervention, once the afflicted area is accurately identified. This is especially notable for some hip complaints. Patients' use of the term "hip" can relate to anything from the low back to groin to lateral thigh pain. Trochanteric area surface localization of "hip" pain may afford an opportunity for immediate cure. Effectiveness of therapeutic intervention is predicated upon injection of not one or two, but all four peri-trochanteric bursa with a depot (minimally water-soluble) corticosteroid. The term trochanteric bursitis suggests that the inflammation is more focal than what is clinically observed. While easier to express, perhaps it is time to refer to inflammation in this area, naming all four affected bursae.

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**Key words:** Trochanter; Bursitis; Bursa; Hip; Injection; Corticosteroids; Dexamethasone; Triamcinolone

**Core tip:** The designation hip pain requires localization to identify effective treatment. Once tenderness is localized to the area of the greater trochanter, it is quite amenable to treatment. However, there are four bursa represented and injection of only one usually does not

resolve the problem. Injection of all four with a corticosteroid that is minimally water soluble is required.

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### HIP PAIN

Bursitis is quite responsive to therapeutic intervention, once the afflicted area is accurately identified. This is especially notable for some hip complaints. Patients' use of the term "hip" can relate to anything from the low back to groin to lateral thigh pain<sup>[1-6]</sup>. The affected area is typically identified by where the patient points. Lateral thigh localization suggests involvement of bursae in the vicinity of the greater trochanter<sup>[7-15]</sup>. Pain on external rotation with abduction is highly suggestive of the diagnosis. Direct palpation of the greater trochanter is usually diagnostic, although slipping ilial-tibial band syndrome must be considered<sup>[15]</sup> and of course, the bursae may rarely be infected (e.g., tuberculosis)<sup>[16]</sup>.

Non-operative orthopedics is a field in which results are typically expected in days (more commonly weeks or months) rather than producing the gratification of immediate and safe resolution of the problem that is so commonly the result of surgical intervention. One diagnosis that I find especially rewarding is that of involvement of peri-trochanteric bursae in individuals with "hip" pain. Such pathology has a female predominance. It is present unilaterally in 15% of women, 8.5% of men; bilaterally, in 6.6% of women, 1.9% of men<sup>[17,18]</sup>. It is rewarding to both physician and patient, as it is especially responsive to injection of the appropriate bursae with triamcinolone and lidocaine<sup>[19-23]</sup>. The lidocaine gives immediate relief of patient symptoms, confirming the diagnosis, while the

triamcinolone provides lasting relief. It is performed with a 22 gauge spinal (3-1/2 inch) needle and is sometimes performed under radiological guidance<sup>[24]</sup>. This injection provides a depot corticosteroid effect, in contrast to the time-limited effect of dexamethasone, whose water solubility results in rapid systemic, rather than localized distribution. Passive movement of the hip through full range of motion subsequent to injection is critical to assure mobilization of the steroid throughout the bursa<sup>[25]</sup>. This intervention is usually effective, even when it is a post-surgical event or in the presence of a leg length discrepancy<sup>[26-28]</sup>, although presence of lower extremity osteoarthritis reduces effectiveness<sup>[18]</sup>.

A recent article<sup>[29]</sup> questioned the efficacy of such injection therapy. However, the identified treatment approach was flawed in its injection of only one or two bursa(e), a common approach<sup>[30]</sup>. I too found disappointing results with that approach. However, there are actually four significant bursae in that location: gluteus medius, gluteus minimus, subgluteus medius and subgluteus minimus bursa<sup>[31]</sup>.

Retrospective assessment of the last 50 individuals in my practice in whom all four bursae were injected revealed immediate elimination of pain in 49. Pain relief persisted more than 6 mo in 47 individuals. Two individuals had recurrent "hip" pain 3 mo after the initial injections. Their pain responded to repeat injection of the four bursae and they have been pain free since. Involvement of bursae was often (30 instances) bilateral. Because of insurance company limitations, unilateral injections were initially performed, with plan to inject the contralateral the following week. An unexpected observation was resolution of pain in the contralateral bursa, as well as in those injected. Given the effect of bursitis on gait<sup>[32,33]</sup>, perhaps injection of the most symptomatic side eliminated the mechanical effect of altered gait. That may have allowed the contralateral side to heal. A systematic effect of the injected depot corticosteroid is unlikely, as injection of the above-named peri-trochanteric bursae did not affect concurrent anserine bursitis (which itself is extremely responsive to injection of a depot corticosteroid), nor did it affect concurrent bicipital or supraspinatus tendonitis. As injection of all four bursae is so effective, the role for diagnostic studies (*e.g.*, magnetic resonance imaging) seems an unnecessary expense<sup>[34-37]</sup>.

It is intriguing that so many exotic approaches (*e.g.*, shock wave therapy and even surgery) to this problem have been pursued<sup>[38-48]</sup>, when a simple injection approach is so frequently and fully effective. Non-steroidal anti-inflammatory drugs may reduce discomfort<sup>[49]</sup>, but have significant systemic effects and do not resolve the underlying inflammation. Injection of only one or two of the four bursae results in partial, but statistically significant pain relief<sup>[8]</sup>. Comparison with elimination of pain in 98% of afflicted individuals by injection of all four bursae suggests the latter provides a greater opportunity for clinical benefit. The term trochanteric bursitis suggests that the inflammation is more focal than what is clinically

observed. While easier to express, perhaps it is time to refer to inflammation in this area, naming all four affected bursae (*i.e.*, gluteus medius, gluteus minimus, subgluteus medius and subgluteus minimus bursitis).

## REFERENCES

- 1 Foye PM, Lorenzo CT. Trochanteric bursitis. Available from: URL: <http://emedicine.medscape.com/article/87788-overview>
- 2 Dougherty C, Dougherty JJ. Evaluating hip pathology in trochanteric pain syndrome. Available from: URL: <http://jmm.consultantlive.com/display/article/1145622/1403501>.
- 3 Dougherty C, Dougherty JJ. Managing and preventing hip pathology in trochanteric pain syndrome. *J Musculoskeletal Med* 2008; **25**: 521-523
- 4 Schapira D, Nahir M, Scharf Y. Trochanteric bursitis: a common clinical problem. *Arch Phys Med Rehabil* 1986; **67**: 815-817 [PMID: 3778178]
- 5 Ege Rasmussen KJ, Fanø N. Trochanteric bursitis. Treatment by corticosteroid injection. *Scand J Rheumatol* 1985; **14**: 417-420 [PMID: 3909381 DOI: 10.3109/03009748509102047]
- 6 Shbeeb MI, Matteson EL. Trochanteric bursitis (greater trochanter pain syndrome). *Mayo Clin Proc* 1996; **71**: 565-569 [PMID: 8642885 DOI: 10.4065/71.6.565]
- 7 Bird PA, Oakley SP, Shnier R, Kirkham BW. Prospective evaluation of magnetic resonance imaging and physical examination findings in patients with greater trochanteric pain syndrome. *Arthritis Rheum* 2001; **44**: 2138-2145 [PMID: 11592379]
- 8 Dundeve-Baleva P, Abdel-Megid A, Borham A, Schlesinger N. Trochanteric bursitis: Is there ultrasonographic evidence to suggest inflammation? *Arthritis Rheum* 2011; **63** Suppl 10: 1898 [DOI: 10.1002/art.33310]
- 9 Brinker MR, Miller MD. Fundamentals of Orthopaedics. Philadelphia: WB Saunders, 1999: 269-285
- 10 Silva F, Adams T, Feinstein J, Arroyo RA. Trochanteric bursitis: refuting the myth of inflammation. *J Clin Rheumatol* 2008; **14**: 82-86 [PMID: 18391676 DOI: 10.1097/RHU.0b013e31816b4471]
- 11 Steinberg JG, Seybold EA. Hip and pelvis. In: Steinberg GG, Akins CM, Baran DT. Orthopaedics in Primary Care. Baltimore: Lippincott, Williams and Wilkins, 1998: 171-203
- 12 Raab SS, Snider TE, Potts SA, McDaniel HL, Robinson RA, Nelson DL, Sigman JD, Thomas PA. Atypical glandular cells of undetermined significance. Diagnostic accuracy and interobserver variability using select cytologic criteria. *Am J Clin Pathol* 1997; **107**: 299-307 [PMID: 9052380]
- 13 Williams BS, Cohen SP. Greater trochanteric pain syndrome: a review of anatomy, diagnosis and treatment. *Anesth Analg* 2009; **108**: 1662-1670 [PMID: 19372352 DOI: 10.1213/ane.0b013e31819d6562]
- 14 McGee DJ. Hip. In: Orthopedic Physical Assessment. 2nd ed. Philadelphia: WB Saunders, 1992: 333-371
- 15 Tibor LM, Sekiya JK. Differential diagnosis of pain around the hip joint. *Arthroscopy* 2008; **24**: 1407-1421 [PMID: 19038713 DOI: 10.1016/j.arthro.2008.06.019]
- 16 Crespo M, Pigrau C, Flores X, Almirante B, Falco V, Vidal R, Pahissa A. Tuberculous trochanteric bursitis: report of 5 cases and literature review. *Scand J Infect Dis* 2004; **36**: 552-558 [PMID: 15370665 DOI: 10.1080/00365540410018157]
- 17 Segal NA, Felson DT, Torner JC, Zhu Y, Curtis JR, Niu J, Nevitt MC. Greater trochanteric pain syndrome: epidemiology and associated factors. *Arch Phys Med Rehabil* 2007; **88**: 988-992 [PMID: 17678660 DOI: 10.1016/j.apmr.2007.04.014]
- 18 Lievens A, Bierma-Zeinstra S, Schouten B, Bohnen A, Verhaar J, Koes B. Prognosis of trochanteric pain in primary care. *Br J Gen Pract* 2005; **55**: 199-204 [PMID: 15808035]
- 19 Breeden Brooks S, Olsen P, Rieger-Kliggs S, Mooney L. Peer review: an approach to performance evaluation in a profes-

- sional practice model. *Crit Care Nurs Q* 1995; **18**: 36-47 [PMID: 7584309]
- 20 **Snider RK**. Essentials of Musculoskeletal Care. Rosemont: American Academy of Orthopaedic Surgeons, 1997: 37-39
  - 21 **Cohen SP**, Strassels SA, Foster L, Marvel J, Williams K, Crooks M, Gross A, Kurihara C, Nguyen C, Williams N. Comparison of fluoroscopically guided and blind corticosteroid injections for greater trochanteric pain syndrome: multicentre randomised controlled trial. *BMJ* 2009; **338**: b1088 [PMID: 19366755 DOI: 10.1136/bmj.b1088]
  - 22 **Brinks A**, van Rijn RM, Willemsen SP, Bohnen AM, Verhaar JA, Koes BW, Bierma-Zeinstra SM. Corticosteroid injections for greater trochanteric pain syndrome: a randomized controlled trial in primary care. *Ann Fam Med* 2011; **9**: 226-234 [PMID: 21555750 DOI: 10.1370/afm.1232]
  - 23 **Shbeeb MI**, O'Duffy JD, Michet CJ, O'Fallon WM, Matteson EL. Evaluation of glucocorticosteroid injection for the treatment of trochanteric bursitis. *J Rheumatol* 1996; **23**: 2104-2106 [PMID: 8970048]
  - 24 **Cohen SP**, Narvaez JC, Lebovits AH, Stojanovic MP. Corticosteroid injections for trochanteric bursitis: is fluoroscopy necessary? A pilot study. *Br J Anaesth* 2005; **94**: 100-106 [PMID: 15516348 DOI: 10.1093/bja/aei012]
  - 25 **Valentine T**, Dama K, Erickson M. Treatment of Greater Trochanteric Bursitis Using Hip Joint Mobilizations as a Part of a Multimodal Plan of Care: A Case Report. Available from: URL: <http://content-dm.carrollu.edu/cdm/ref/collec-tion/ptthesis/id/90>
  - 26 **Clarke MT**, Lee PT, Arora A, Villar RN. Levels of metal ions after small- and large-diameter metal-on-metal hip arthroplasty. *J Bone Joint Surg Br* 2003; **85**: 913-917 [PMID: 12931818]
  - 27 **Farmer KW**, Jones LC, Brownson KE, Khanuja HS, Hungerford MW. Trochanteric bursitis after total hip arthroplasty: incidence and evaluation of response to treatment. *J Arthroplasty* 2010; **25**: 208-212 [PMID: 19261433]
  - 28 **Clarke MT**, Arora A, Villar RN. Hip arthroscopy: complications in 1054 cases. *Clin Orthop Relat Res* 2003; **(406)**: 84-88 [PMID: 12579004]
  - 29 **McEvoy JR**, Lee KS, Blankenbaker DG, Munoz del Rio A, Keene JS. Ultrasound-guided corticosteroid treatment of great trochanteric pain syndrome: A comparative effectiveness between greater trochanteric proper bursa and subgluteus medius bursa injections. *Skeletal Radiol* 2012; **41**: 744 [DOI: 10.1007/s00256-012-1403-8]
  - 30 **Cardone DA**, Tallia AF. Diagnostic and therapeutic injection of the hip and knee. *Am Fam Physician* 2003; **67**: 2147-2152 [PMID: 12776964]
  - 31 **Pfirrmann CW**, Chung CB, Theumann NH, Trudell DJ, Resnick D. Greater trochanter of the hip: attachment of the abductor mechanism and a complex of three bursae--MR imaging and MR bursography in cadavers and MR imaging in asymptomatic volunteers. *Radiology* 2001; **221**: 469-477 [PMID: 11687692 DOI: 10.1148/radiol.2211001634]
  - 32 **Shakoob N**, Moio K. A biomechanical approach to musculoskeletal disease. *Best Pract Res Clin Rheumatol* 2004; **18**: 173-186 [PMID: 15121038 DOI: 10.1016/j.berh.2004.02.005]
  - 33 **Swezey RL**. Pseudo-radiculopathy in subacute trochanteric bursitis of the subgluteus maximus bursa. *Arch Phys Med Rehabil* 1976; **57**: 387-390 [PMID: 133652]
  - 34 **Fearon AM**, Scarvell JM, Cook JL, Smith PN. Does ultra-sound correlate with surgical or histologic findings in greater trochanteric pain syndrome? A pilot study. *Clin Orthop Relat Res* 2010; **468**: 1838-1844 [PMID: 19941093 DOI: 10.1007/s11999-009-1174-2]
  - 35 **Kong A**, Van der Vliet A, Zadow S. MRI and US of gluteal tendinopathy in greater trochanteric pain syndrome. *Eur Radiol* 2007; **17**: 1772-1783 [PMID: 17149624 DOI: 10.1007/s00330-006-0485-x]
  - 36 **Blankenbaker DG**, Ullrick SR, Davis KW, De Smet AA, Haaland B, Fine JP. Correlation of MRI findings with clinical findings of trochanteric pain syndrome. *Skeletal Radiol* 2008; **37**: 903-909 [PMID: 18566811 DOI: 10.1007/s00256-008-0514-8]
  - 37 **McMahon SE**, Smith TO, Hing CB. A systematic review of imaging modalities in the diagnosis of greater trochanteric pain syndrome. *Musculoskeletal Care* 2012; **10**: 232-239 [PMID: 22764065 DOI: 10.1002/msc.1024]
  - 38 **Bierma-Zeinstra SM**, Bohnen AM, Bernsen RM, Ridderikhoff J, Verhaar JA, Prins A. Hip problems in older adults: classification by cluster analysis. *J Clin Epidemiol* 2001; **54**: 1139-1145 [PMID: 11675165 DOI: 10.1016/S0895-4356(01)00398-5]
  - 39 **Furia JP**, Rompe JD, Maffulli N. Low-energy extracorporeal shock wave therapy as a treatment for greater trochanteric pain syndrome. *Am J Sports Med* 2009; **37**: 1806-1813 [PMID: 19439756 DOI: 10.1177/0363546509333014]
  - 40 **Lustenberger DP**, Ng VY, Best TM, Ellis TJ. Efficacy of treatment of trochanteric bursitis: a systematic review. *Clin J Sport Med* 2011; **21**: 447-453 [PMID: 21814140 DOI: 10.1097/JSM.0b013e318221299c]
  - 41 **Lennard TA**. Physiatric Procedures in Clinical Practice. Philadelphia: Hanley and Belfus, 1995: 1-13
  - 42 **Vannet N**, Ferran N, Thomas A, Ghandour A, O'Doherty A. The use of shockwave therapy in the treatment of trochanteric bursitis. *J Bone Joint Surg Br* 2010; **92**: 393
  - 43 **Rompe JD**, Segal NA, Cacchio A, Furia JP, Morral A, Maffulli N. Home training, local corticosteroid injection, or radial shock wave therapy for greater trochanter pain syndrome. *Am J Sports Med* 2009; **37**: 1981-1990 [PMID: 19439758 DOI: 10.1177/0363546509334374]
  - 44 **Slawski DP**, Howard RF. Surgical management of refractory trochanteric bursitis. *Am J Sports Med* 1997; **25**: 86-89 [PMID: 9006699 DOI: 10.1177/036354659702500117]
  - 45 **Baker CL**, Massie RV, Hurt WG, Savory CG. Arthroscopic bursectomy for recalcitrant trochanteric bursitis. *Arthroscopy* 2007; **23**: 827-832 [PMID: 17681203 DOI: 10.1016/j.arthro.2007.02.015]
  - 46 **Farr D**, Selesnick H, Janecki C, Cordas D. Arthroscopic bursectomy with concomitant iliotibial band release for the treatment of recalcitrant trochanteric bursitis. *Arthroscopy* 2007; **23**: 905.e1-905.e5 [PMID: 17681215]
  - 47 **Voos JE**, Rudzki JR, Shindle MK, Martin H, Kelly BT. Arthroscopic anatomy and surgical techniques for peritrochanteric space disorders in the hip. *Arthroscopy* 2007; **23**: 1246.e1-1246.e5 [PMID: 17986418]
  - 48 **Fox JL**. The role of arthroscopic bursectomy in the treatment of trochanteric bursitis. *Arthroscopy* 2002; **18**: E34 [PMID: 12209419 DOI: 10.1053/jars.2002.35143]
  - 49 **Green DA**, Murphy WG, Uttley WS. Haemolytic uraemic syndrome: prognostic factors. *Clin Lab Haematol* 2000; **22**: 11-14 [PMID: 10762298]

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