

## Research Article

# Endoscopic Bursectomy is a Feasible and Safe Procedure in Palpable Bursitis of the Knee and Elbow

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- Endoscopy

**Abstract**

**Background:** Prepatellar and olecranon bursitis are common pathologies, mostly in men between 40 and 60 years of age. About one third of all cases are septic. Endoscopy gives the possibility to treat bursitis of the knee or elbow via two small stab incisions. In our fellows we noticed that this procedure is very little known. We analysed the clinical outcomes of endoscopic bursectomy of the knee and elbow. The aim of this study was to determine potential problems and clinical outcome after endoscopic bursectomy of knee or elbow.

**Methods:** In this retrospective study we included 15 consecutive patients with endoscopic bursectomy of the knee or elbow treated in our hospital between 2010 and 2013. The average follow-up was 36 (range 24-56) months. For evaluation we used the numeric-pain-scale (0-10) and rates of complications and revisions.

**Results:** The operations were performed in symptomatic patients with palpable bursitis of the knee (n=9) or elbow (n=6). No patient had revision surgery or any complications. All patients didn't have any pain at the operation site at follow-up.

**Conclusion:** Endoscopic bursectomy is feasible in palpable bursitis of the knee or elbow. It is a safe procedure and revealed very good clinical outcome and patient satisfaction.

**ABBREVIATIONS**

NSAID: Non Steroidal Anti Inflammatory Drugs

**INTRODUCTION**

Bursae are located at many mechanical strained parts of the body. They are sack-like structures with a surrounding synovial membrane. Around joints they enable gliding of tissue layers against each other with very low friction.

Bursitis of the knee or elbow has an incidence of 10/100.000 people per year. Males are more often affected than females. About two-thirds of the cases are aseptic and one-third septic bursitis. Bacterial bursitis is found more often at the elbow than at the knee [1, 2]. Dry and chapped skin facilitates the infection of a bursa with residual bacteria of the skin – mostly staphylococcus aureus [3]. Possible reasons for aseptic bursitis are acute or chronic repetitive traumata, cristal arthropathies, or rheumatoid arthritis [4].

Conservative treatment of aseptic bursitis consists of mechanical relief and non-steroidal-anti-inflammatory drugs (NSAID). In septic bursitis additional antibiotic treatment with a cephalosporin group one or two is used. Via aspiration one can obtain material for microbiologic diagnostics and development of an antibiogram [5,6]. If conservative treatment is unsuccessful over a period of two to three weeks, then operative treatment via bursectomy is indicated [7,8]. In cases with systemic inflammation and fever immediate bursectomy and intravenous antibiotic therapy with hospitalisation is necessary [9].

In principle, bursectomy can be performed via open or endoscopic approaches [10-12]. We have noticed in most of our fellows and visiting fellows that the endoscopic procedure is unknown. We did a follow-up examination of our patients for evaluation of clinical results after endoscopic bursectomy. We hypothesize that endoscopic bursectomy is a safe and successful procedure with high patient satisfaction in palpable bursitis of the elbow or knee.

## PATIENTS AND METHODS

From our database we identified all 15 consecutive patients who underwent endoscopic bursectomy of the knee or elbow at our department between January 2010 and December 2013. Ten patients were males and five females. The mean age was 54 years (range 24-87) at the time of surgery.

At first all cases were treated conservatively with mechanical relief and NSAID. In septic cases (n=5) with rubor and increased clinical chemistry parameters of inflammation (C-reactive protein, Leucocyte Count) additionally oral antibiotic therapy with cefuroxime was supplied. There was no patient with systemic inflammatory response like fever. No soft tissue necrosis could be noted. After unsuccessful conservative treatment of two to three weeks with persistent pain and swelling endoscopic bursectomy was performed. In all these patients the swollen bursa was easily palpable preoperatively.

Knee surgeries were performed in supine patient position with a leg holder. Olecranon bursectomy was done in lateral position with the upper arm in an arm holder. Surgeries were performed with a tourniquet in all aseptic cases and without a tourniquet in septic bursitis. After skin disinfection and draping in a standard manner the bursa was instilled with sterile saline solution via a cannula. Then via a stab incision a wissinger rod was introduced into the bursa. The arthroscopy shaft was administered over the rod into the bursa. Afterwards fluid inflow was secured and a standard arthroscope (30°, Storz, Tuttlingen, Germany) was introduced. A working portal was established via a second stab incision in outside-in-technique. Resection of the bursa volume with a shaver was done. Then resection of the wall of the whole bursa sac followed. In order to reach all parts of the bursa sac portals were changed using a wissinger rod. Finally, the tourniquet was opened and coagulation was done with a bipolar system. All fluid was removed endoscopically. Only in septic cases we administered redon drainage via the arthroscopic trocar into the wound cavity. In all aseptic cases we did not use drainage; in septic cases redon drainage was applied for three days. Over a sterile wound dressing we put on a light compression bandage for several days postoperatively. Patients were allowed pain adapted weight bearing and unlimited range of motion. In cases of septic bursitis patients needed to rest and got intravenous antibiotic therapy with a cephalosporin. Intraoperative specimens were processed to develop an antibiogram. Where needed antibiotic treatment was adapted according to the results of the microbiological diagnostics. Depending on local findings at operation site and clinical chemistry parameters over time antibiotic treatment was prolonged until two or three weeks postoperatively in septic cases.

Follow-up examinations were performed on average 36 (min. 24, max. 56) months postoperatively. For analysing the outcomes after surgery we used the numerical-analogue-pain-scale and rates of complication and revision surgeries.

## RESULTS AND DISCUSSION

Endoscopic bursectomy of the knee (n=9) or elbow (n=6) was performed in patients with conservative therapy resistant bursitis. There were eight cases of aseptic and one case of septic

bursitis of the knee. There were two aseptic and four septic cases of olecranon bursitis.

No complications and no revision surgeries could be recorded. At time of follow-up examination all patients were pain free with no significant clinical findings or tenderness to touch at the operation site. All patients had free range of motion between 0/0/140° and 0/0/130°.

This study demonstrated in a limited number of patients that endoscopic bursectomy of palpable bursitis of the knee or the elbow is a safe procedure in septic and aseptic cases. Although bursitis of knee or elbow is a common problem in many patients, no single well defined treatment path exists. Differences in therapy exist because of subjective thinking, education, and experience of the treating doctors.

In 2014 a review developing a treatment algorithm was published [13]. This algorithm can be used as a guideline especially by less experienced doctors. Only in one point we have a different opinion than the authors. We don't think that one should aspirate every patient with bursitis. Less than half of all cases are bacterial bursitis [1,2]. We differentiate between aseptic and septic bursitis clinically and with the help of chemical laboratory parameters (C-reactive-protein, leucocytes). A clear cut-off does not exist.

Bursitis of the knee or elbow should not be operated in acute inflammatory state, because then it is more difficult to see the anatomic borders of the bursa. An exception is to be made in septic bursitis with systemic inflammatory response with fever [14,15].

After indicating bursectomy the question arises which operative procedure to use: open or endoscopic technique? Today open and endoscopic bursectomy are established procedures. A faster rehabilitation, less morbidity, and better cosmetic results are reported after endoscopic bursectomy [10-12, 16-18]. But we have noticed that the possibility of endoscopic bursectomy of the knee and elbow is not known in all orthopaedic and trauma departments today.

Especially, palpable bursitis with a thickened bursal sack is a good indication for the endoscopic technique. If the standard preoperative x-rays show a bony spur, then we usually perform open bursectomy with open resection of the spur [19]. Informed consent should involve explanation of endoscopic and open procedures.

Our experience and clinical results show that endoscopic bursectomy can lead to very good outcomes when correctly indicated. This is also reported by other authors [10-12, 16-18].

## CONCLUSION

In aseptic or septic prepatellar and olecranon bursitis with unsuccessful conservative treatment, endoscopic bursectomy is a recommendable therapy option. Easily palpable bursae are particularly eligible for the endoscopic procedure. Postoperatively a slight compression bandage should be applied for about five days. Only in septic cases redon drainage is recommended. In aseptic cases application of a drain is not necessary.

## REFERENCES

1. Ho G Jr, Tice AD. Comparison of nonseptic and septic bursitis. Further observations on the treatment of septic bursitis. *Arch Intern Med.* 1979; 139: 1269-1273.
2. Stell IM. Septic and non-septic olecranon bursitis in the accident and emergency department--an approach to management. *J Accid Emerg Med.* 1996; 13: 351-353.
3. Hanrahan JA. Recent developments in septic bursitis. *Curr Infect Dis Rep.* 2013; 15: 421-425.
4. McAfee JH, Smith DL. Olecranon and prepatellar bursitis. Diagnosis and treatment. *West J Med.* 1988; 149: 607-610.
5. Shell D, Perkins R, Cosgarea A. Septic olecranon bursitis: recognition and treatment. *J Am Board Fam Pract.* 1995; 8: 217-220.
6. McFarland EG, Mamanee P, Queale WS, Cosgarea AJ. Olecranon and prepatellar bursitis: treating acute, chronic, and inflamed. *Phys Sportsmed.* 2000; 28: 40-52.
7. Baumbach SF, Wyen H, Perez C, Kanz KG, Uçkay I. Evaluation of current treatment regimens for prepatellar and olecranon bursitis in Switzerland. *Eur J Trauma Emerg Surg.* 2013; 39: 65-72.
8. Baumbach SF, Michel M, Wyen H, Buschmann CT, Kdolsky R, Kanz KG. [Current treatment concepts for olecranon and prepatellar bursitis in Austria]. *Z Orthop Unfall.* 2013; 151: 149-155.
9. Abzug JM, Chen NC, Jacoby SM. Septic olecranon bursitis. *J Hand Surg Am.* 2012; 37: 1252-1253.
10. Kaalund S, Breddam M, Kristensen G. Endoscopic resection of the septic prepatellar bursa. *Arthroscopy.* 1998; 14: 757-758.
11. Ogilvie-Harris DJ, Gilbert M. Endoscopic bursal resection: the olecranon bursa and prepatellar bursa. *Arthroscopy.* 2000; 16: 249-253.
12. Huang YC, Yeh WL. Endoscopic treatment of prepatellar bursitis. *Int Orthop.* 2011; 35: 355-358.
13. Baumbach SF, Lobo CM, Badyine I, Mutschler W, Kanz KG. Prepatellar and olecranon bursitis: literature review and development of a treatment algorithm. *Arch Orthop Trauma Surg.* 2014; 134: 359-370.
14. Ho G Jr, Tice AD, Kaplan SR. Septic bursitis in the prepatellar and olecranon bursae: an analysis of 25 cases. *Ann Intern Med.* 1978; 89: 21-27.
15. Damert HG, Altmann S, Schneider W. [Soft-tissue defects following olecranon bursitis: treatment options for closure]. *Chirurg.* 2009; 80: 448, 450-454.
16. Kerr DR, Carpenter CW. Arthroscopic resection of olecranon and prepatellar bursae. *Arthroscopy.* 1990; 6: 86-88.
17. Kerr DR. Prepatellar and olecranon arthroscopic bursectomy. *Clin Sports Med.* 1993; 12: 137-142.
18. Steinacker T, Verdonck AJ. [Endoscopic therapy of pre-patellar bursitis]. *Sportverletz Sportschaden.* 1998; 12: 162-164.
19. Quayle JB, Robinson MP. A useful procedure in the treatment of chronic olecranon bursitis. *Injury.* 1978; 9: 299-302.

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