International Journal of Colorectal Disease (2019) 34:763–767
https://doi.org/10.1007/s00384-019-03243-z

SHORT COMMUNICATION

A mini-invasive procedure for the treatment of supralevator abscess of cryptoglandular origin by extrasphincteric extension: preliminary results at 1-year follow-up

Michele Schiano di Visconte[1] · Gianluca Piccoli[2] · Luigi Brusciano[3] · Ludovico Docimo[3] · Marta Veronese[2]

Accepted: 10 January 2019 / Published online: 15 January 2019

Abstract

Aim The aim of this retrospective study is to evaluate the preliminary results of a mini-invasive procedure for the treatment of supralevator abscesses (SLA) of cryptoglandular origin by extrasphincteric extension.

Method In this clinical study, an innovative two-stage procedure was tested for the surgical treatment of SLA. As first step and as a preparation for surgery, the interventional radiologist positioned a CT-guided percutaneous perianal guidewire inside the abscess cavity under local anesthesia. As second step, the surgeon performed an abscess incision and drainage around the guidewire, with a complete debridement of all the necrotic tissue. If a complex anal fistula was identified, a loose seton was placed in situ.

Results Nine patients, comprising 5 men (55%) and 4 women (45%), underwent the above-mentioned two-stage procedure to treat SLA of cryptoglandular origin. Median age was 32 years (range, 25–42 years). A silicone draining seton was placed during the surgical procedure in 5 patients (55%), since a coexisting fistula was also revealed by surgery. A repeat surgery, along with a new drainage procedure, was required in one patient out of nine (11.1%) for a complete wound healing. The complete wound healing was achieved after a median of 30 days (range, 26–38). At the 1-year follow-up, the healing rate was 89%.

Conclusions The treatment of SLA of cryptoglandular origin by using this innovative two-stage procedure may be a safe and convenient surgical option to effectively decrease the risk of recurrence and anal sphincteric injuries.

Keywords Supralevator abscess · CT scan · Drainage · Mini-invasive

Introduction

Anorectal abscesses are a common surgical condition and manifest different propagation pathways. Their location is most commonly in the perianal region (44.8%), followed by intersphincteric abscesses (28%), and ischiorectal abscesses (12.8%). Supralevator abscesses (SLA) are the most uncommon, occurring in only 3.6% of total anorectal abscesses [1].

Patients affected by "low" anorectal abscess (i.e., intersphincteric, perianal, and ischiorectal) commonly experience anorectal pain, usually associated with swelling, cellulites, and exquisite tenderness [1].

Patients with "high" anorectal abscesses (i.e., submucosal or supralevator) could instead experience vague symptoms, such as pelvic pain, tenesmus, and fever, even in the absence of external clinical signs, such as erythema, edema, tenderness on palpation, or fluctuance [2].

In the occurrence of significant perineal pain of unexplained origin, without any manifestation of the above-mentioned signs, patients commonly undergo imaging study, usually CT or MRI [3].

An anorectal abscess requires a surgical procedure for early and adequate drainage.

The aim of this retrospective study is to evaluate the preliminary results of a mini-invasive two-stage procedure for the

✉ Michele Schiano di Visconte
mschianodivisconte@gmail.com

[1] Colorectal and Pelvic Floor Diseases Center, Department of General Surgery, "S. Maria dei Battuti" Hospital, Via Brigata Bisagno 4, 31015 Conegliano, TV, Italy

[2] Department of Radiology, "S. Maria dei Battuti" Hospital, Via Brigata Bisagno 4, 31015 Conegliano, TV, Italy

[3] Division of General, Mininvasive and Obesity Surgery, University of Study of Campania "Vanvitelli", Naples, Italy

treatment of SLA of cryptoglandular origin by extrasphincteric extension.

Materials and methods

A retrospective cohort analysis was conducted on prospectively collected data on 9 patients who underwent a two-stage treatment for drainage of SLA of cryptoglandular origin by extrasphincteric extension, defined according to the American Society of Colon and Rectal Surgeons guidelines [4]. The patients were treated in the colorectal surgery unit of Hospital "S. Maria dei Battuti", Conegliano, Treviso, Italy, between April 1, 2011, and December 31, 2017.

Preoperative evaluation

The preoperative evaluation included both a clinical and a proctologic examination [4]. Computed tomography (CT) scan was the favored first-line imaging modality used by our team to assess origin, location, extension of the abscess and to exclude the intra-abdominal origin of the abscess, besides the anatomy of adjacent organs. Magnetic resonance imaging (MRI) was performed only in patients where the first CT scan test could not adequately assess above-mentioned parameters.

Surgical technique

A two-stage procedure was performed by our team. As a preparation to stage 1, patients were assessed by abdominopelvic CT scan, in order to exclude the intra-abdominal origin of the abscess.

Once this latter option was cleared and diagnosis of SLA was confirmed by imaging test, the interventional radiologist positioned a CT-guided percutaneous perianal guidewire under a local anesthesia (Relock Premium Soft, Vigeo S.r.l., Mantova, Italy). The guidewire consisted in a retractable hook with a polyamide guiding thread to reduce migration and promote its stabilization in the abscess cavity (Fig. 1).

At stage 2, patients were taken to the operating room to undergo a surgical drainage under a general anesthesia. Patients were placed in the lithotomy position. An elliptical perianal skin incision was performed around the guidewire and the superficial tissue removed (Fig. 2). The supralevator abscess cavity was entered to conduct exploration by following the guidewire direction. A complete debridement of the abscess cavity was performed, with removal of all necrotic tissue. If external fistula openings were found in the perianal area, the fistula tract was evaluated with probing, and in addition to the drainage, a silicon seton was placed in fistula tract. If fistula tract was not identified, the approach adopted by our team was to simply drain the SLA. Afterwards, the cavity was irrigated with hydrogen peroxide and packed with iodoform gauze.

As follow-up care after surgery, all patients were revaluated 36 to 48 h after surgery. The cavity was irrigated with hydrogen peroxide and gently packed with iodoform gauze.

The seton remained in situ until the fistula tract completely drained to obtain a non-suppurating tract without residual abscess. Subsequently, the Permacol collagen paste was injected according to the following technique [5].

Postoperative follow-up

Patients were discharged within 48 to 72 h after surgery with instructions to remove the iodoform pack and to apply warm wet soaks to the anorectal area, for 15–20 min, 4/5 times a day, and after bowel movements.

As follow-up care, all patients received clinical and proctologic examinations at the outpatient clinic at postoperative, scheduled at 1, 2, and 4 weeks, and 3, 6, and 12 months.

Results

During this study period, 9 patients, comprising 5 men (55%) and 4 women (45%) underwent a two-stage procedure for SLA of cryptoglandular origin by extrasphincteric extension. Six patients out of 9 underwent a previous drainage of perianal abscess, with a median of two previous episodes.

Before treatment, patients with SLA origin by extrasphincteric extension had experienced pelvic pain for a median of 6 days (range, 4–12 days), 8 patients had complained of perianal pressure sensation, 4 patients had showed external clinical signs, such as erythema, edema, tenderness on palpation, or fluctuance.

A silicone draining seton was positioned during surgery for coexisting fistulas in 5 patients (55%). In declining order, transsphincteric [4] and intersphincteric [1] fistulas were identified intraoperatively.

No intraoperative complications were recorded.

Wound healing was complete after a median of 30 days (range, 26–38). Patients were evaluated for a median follow-up time of 14 months (range, 9–18 months). At 1-year follow-up, the healing rate was 89%.

After 3 months, 1 patient (11%) underwent additional surgery due to the recurrence of SLA by extrasphincteric extension and underwent again the two-stage procedure.

During the follow-up, 3 patients (33%) developed a transsphincteric fistula. A silicone draining seton was placed in the fistula tract and the patients underwent elective surgical procedure with the Permacol™ paste injection.

Discussion

SLA is a rare subgroup of anorectal suppuration and the best surgical treatment to opt for is still controversial [6].

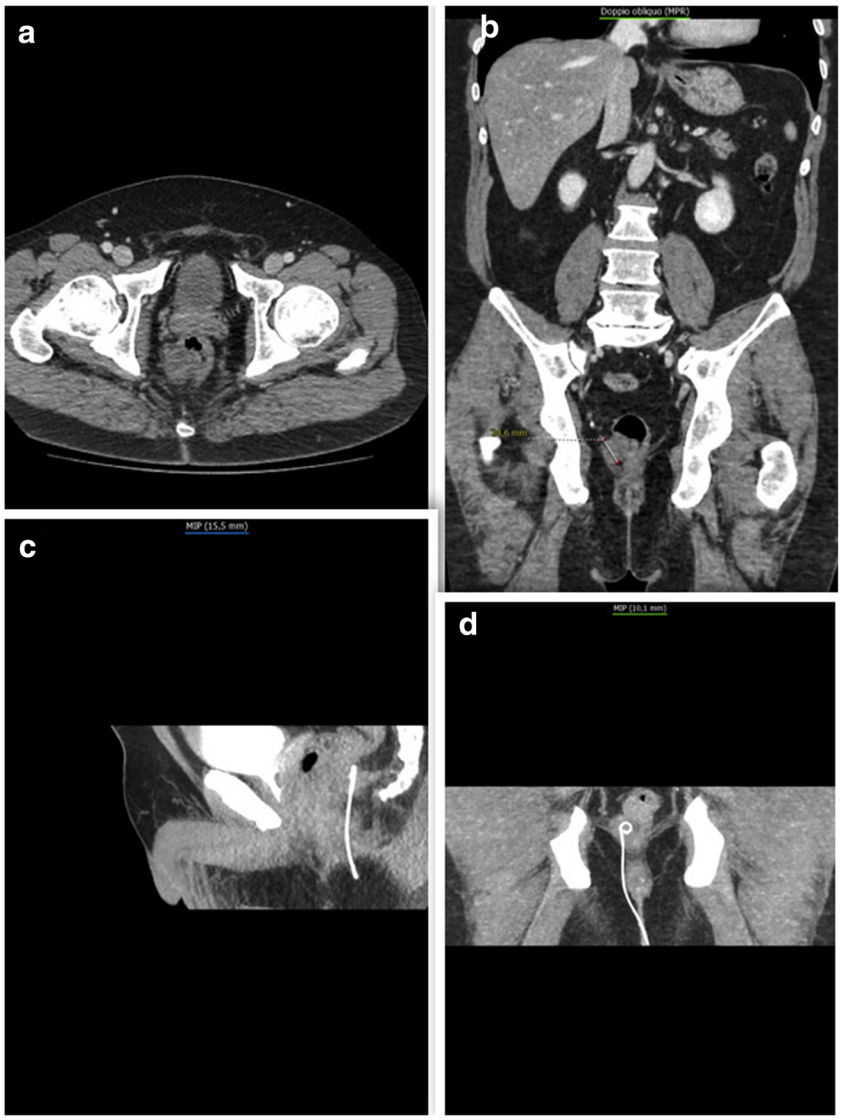

Fig. 1 CT scan images, shown in axial **a** and sagittal projections **b**, revealing supralevator abscess (SLA). In image **b**, the challenging mini-size of SLA is clearly visible. In images **c** and **d**: the correct positioning of the guidewire in the abscess cavity through TC scan guidance

Rectal examination usually reveals a tender, indurated area above the anorectal ring, and imaging diagnostic tools, either endoanal ultrasonography (EAUS), CT, and/or MRI, are needed to lead to a correct clinical diagnosis [3, 7]. Each of the above has its own specific advantages and disadvantages—EAUS, no exposure to ionizing radiation, relative ease of use, easy and quick to perform, and low cost. However, the introduction of the transanal transducer is poorly tolerated in many patients with acute anal pain [8].

In our study, 44.4% of patients (4 out of 9) complained of acute anal pain, without signs of suppuration at physical examination. In those cases, it was necessary to exclude the intra-abdominal origin of abscess, and EAUS does not provide information on presence, location, or extent of drainable fluid. Up to now, EAUS has not demonstrated a diagnostic accuracy in the diagnosis of ischiorectal abscesses deeply located in the ischiorectal fossa, since they are frequently obscured by shadowing from the anococcygeal ligament, even if EAUS is complemented by a postprocessing computer technique of volume rendering [9].

Similarly to Khati et al., our study confirmed that CT is an effective diagnostic imaging tool for evaluation of patients in case of clinical suspicion of SLA [7]. CT scan helps to correctly evaluate 1) supralevator, 2) ischioanal, and 3) deep postanal spaces. CT scan could potentially identify and define features of the fistula tract [7].

However, CT has some limitations. In our study, the CT scan did not lead to a correct diagnosis in the case of 2 patients (23%), who therefore underwent MRI examination. The combined sensitivity and specificity of CT could be suboptimal because of the decreased contrast and spatial resolution in the pelvis [10]. However, multi-plane reconstruction computerized tomography (MPR CT) has its own distinct advantages over the traditional single axial view CT [8].

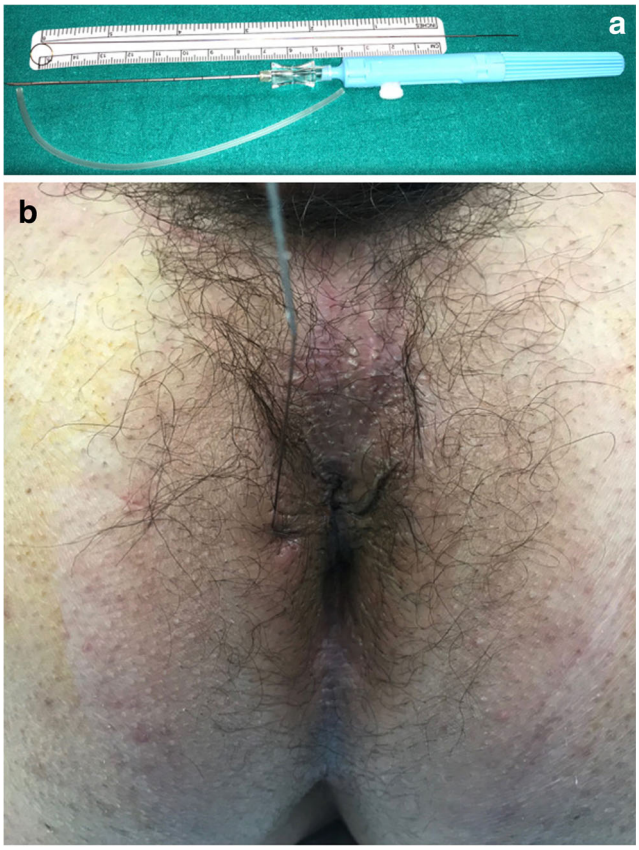

Fig. 2 In image **a** percutaneous guidewire is visible. In image **b**, the perianal percutaneously positioned guidewire

According to Nuha et al., we also believe that CT has a role in the acute setting [10] and, above all, that the MPR CT could be a correct diagnostic approach to SLA [8].

Up to now, data-based medical evidence commonly considers MRI to be superior to CT scan to diagnose SLA and to detect complex anal fistulas [6, 7, 10]. However, also MRI has some limitations—1, it is not always an available option on short notice; 2, it is not easy to MRI scan emergency patients. Finally, there is neither evidence nor guidelines in the literature that recommend the use of EAUS and MRI in the diagnosis of SLA [11].

A key step in treating SLA is the choice of the adequate drainage route, to prevent recurrent abscess, sphincter damage, and/or the formation of complex anal fistulas that, as generally recognized in literature, are very difficult to treat surgically.

In the occurrence of SLA of cryptoglandular origin by extrasphincteric extension, a drainage should be performed perianally through the skin [12]. In this case, some authors recommend the use of a mushroom catheter in the abscess cavity to reduce the risk of a poor drainage abscess [6, 12]. However, the optimal timing of the catheter removal from the abscess cavity has not been determined yet and it could vary from a few days to several weeks [1]. In our experience, a long-term catheter use causes considerable discomfort in patients and increases the hospitalization days.

Our study recorded a success rate of 89%, with complete wound healing. Besides, our data corroborated the initial hypothesis that a CT-guided placement of the guidewire to drain SLA is safe and convenient, since the CT guidance provides good contrast and spatial resolution for accurate localization of abscess. Overall, our approach led to an effective drainage of abscess and to the reduction of anal sphincter and blood vessel injuries.

Conclusions

Our two-stage technique enabled to drain SLA with a single small incision, which enabled a faster healing, a shorter recovery time. Besides, patients treated recorded no post-op complications and reduced postoperative pain.

Author contributions MSdV conceived and designed the study, analyzed and interpreted relevant data, drafted the manuscript. MSdV, GP, LB, LD, and MV acquired the data and critically revised the manuscript. All authors have read and approved the final version of the manuscript for publication.

Compliance with ethical standards

Conflict of interest The authors declare that there is no conflict of interest.

Ethical approval All procedures performed in this study were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration, last amended at the 64th WMA General Assembly, Fortaleza, Brazil, October 2013, or comparable ethical standards. For this type of study, formal consent by the institutional research committee is not required in Italy. Informed consent was obtained from all patients included in this study.

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

References

1. Bradley RD, Kevin RK (2016) Anorectal abscess and fistula. In: Steele SR, Hull TL, Read TE, Saclarides TJ, Senagore AJ, Whitlow CB (eds) The ASCRS textbook of colon and rectal surgery. Springer, New York, pp 215–244
2. Sneider EB, Maykel JA (2013) Anal abscess and fistula. Gastroenterol Clin N Am 42:773–784
3. Garcia-Granero A, Granero-Castro P, Frasson M, Flor-Lorente B, Carreño O, Espí A, Puchades I, Garcia-Granero E (2014) Management of cryptoglandular supralevator abscesses in the magnetic resonance imaging era: a case series. Int J Color Dis 29(12): 1557–1564
4. Vogel JD, Johnson EK, Morris AM, Paquette IM, Saclarides TJ, Feingold DL, Steele SC (2016) Clinical practice guideline for the management of anorectal abscess, fistula-in-ano, and rectovaginal fistula. Dis Colon Rectum 59(12):1117–1133

5. Schiano di Visconte M, Bellio G (2018) Comparison of porcine collagen paste injection and rectal advancement flap for the treatment of complex cryptoglandular anal fistulas: a 2-year follow-up study. Int J Color Dis 33:1723–1731
6. Ortega AE, Bubbers E, Liu W, Cologne KG, Ault GT (2015) A novel classification, evaluation, and treatment strategy for supralevator abscesses. Dis Colon Rectum 58: 1109–1110
7. Khati NJ, Sondel Lewis N, Frazier AA, Obias V, Zeman RK, Hill MC (2015) CT of acute perianal abscesses and infected fistulae: a pictorial essay. Emerg Radiol 22:329–335
8. Ortega AE, Cologne KG, Shin J, Lee SW, Ault GT (2017) Treatment-based three-dimensional classification and management of anorectal infections. World J Surg 41(2):574–589
9. Sudoł-Szopińska I, Kołodziejczak M, Szopiński TR (2011) The accuracy of a postprocessing technique–volume render mode–in three-dimensional endoanal ultrasonography of anal abscesses and fistulas. Dis Colon Rectum 54(2):238–244
10. Yassin NA, Dardanov D, Phillips RK (2015) Sepsis, CT, and the deep postanal space: a riddle, wrapped in a mystery, inside an enigma. Dis Colon Rectum 58(11):1111–1113
11. Ommer A, Herold A, Berg E, Fürst A, Sailer M, Schiedeck T (2012) German S3 guideline: anal abscess. Int J Color Dis 27: 831–837
12. Téoule P, Seyfried S, Joos A, Bussen D, Herold A (2018) Management of retrorectal supralevator abscess-results of a large cohort. Int J Color Dis 33:1589–1594. https://doi.org/10.1007/s00384-018-3094-7