

Sacrococcygeal hernia: a challenge for the coloproctologist

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ABSTRACT: Sacrococcygeal hernia consists of the protrusion of abdominal and pelvic structures through the sacrococcygeal region, an uncommon complication of coccygectomy and sacral coccygectomy. Its surgical treatment is based on perineal hernia repair, by means of abdominal, perineal or abdominoperineal access. Perineal (local or sacrococcygeal) access avoids the laparotomy morbidity and is indicated to patients that are not exposed to radiation or those who had not undergone oncological surgery, allowing local tissue to reconstruct, as in myocutaneous advancement flaps, associated or not to prosthetic mesh, because of the low complication rates and favourable outcomes. The aim of this article is to report the case of a female patient who had undergone sacral coccygectomy due to refractory coccygodynia and developed a symptomatic sacrococcygeal hernia. She underwent polytetrafluoroethylene mesh herniorrhaphy followed by soft tissue closure and gluteal myocutaneous V-Y advancement flap. The authors emphasize technical details and the difficulty of the procedure itself. After three years of follow-up, no recurrence was found.

Keywords: sacrococcygeal region; polytetrafluoroethylene; rectum; prostheses and implants.

RESUMO: As hérnias sacrococcígeas são protrusões de estruturas pélvicas e abdominais pela topografia do sacro e cóccix, sendo complicação incomum após coccigectomias ou sacrococcigectomias. O tratamento é cirúrgico e baseado na correção das hérnias perineais, e pode ser realizado por acesso perineal, abdominal ou abdominoperineal. O perineal (local ou sacrococcígeo), sem a morbidade da laparotomia, é viável para os pacientes não submetidos à cirurgia oncológica ou radioterapia, permitindo a reconstrução com tecidos locais, como no avanço miocutâneo, associado ou não ao uso de telas, com baixa incidência de complicações e bons resultados. O objetivo deste artigo é apresentar o caso de uma paciente submetida à sacrococcigectomia por coccigodinia refratária ao tratamento clínico, que evoluiu com hérnia sacrococcígea sintomática tratada com a correção do defeito com tela de politetrafluoretileno e síntese das camadas suprajacentes, associada ao avanço miocutâneo bilateral tipo V-Y, com o glúteo maior. Serão enfatizados detalhes técnicos e o grau de dificuldade da reconstrução. Após seguimento de três anos, a paciente se encontra em acompanhamento ambulatorial sem recidiva.

Palavras-chave: hérnia; região sacrococcígea; politetrafluoretileno; reto; próteses e implantes.

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INTRODUCTION

The sacrococcygeal hernia consists of the protrusion of pelvic and abdominal structures by the topography of the sacrococcygeal region, which is an uncommon complication after coccygectomy and sacral coccygectomy¹. Perineal hernias, although being considered as similar by some authors², consist of the protrusion of the pelvic floor limited by ischial tuberosities, coccyx and the pubic bone, which results, for instance, from the abdominoperineal amputation of the rectum or pelvic exenteration^{3,4}.

It is known that symptomatic perineal hernias occur in at least 1% of the abdominoperineal resections of the rectum³⁻⁵, while the sacrococcygeal hernia is even less seen, only described in case reports^{6,7}, and none of them is from Latin America.

Coccyx resections are common for the surgical treatment of coccygodynia⁸⁻¹¹, whereas the sacral coccygectomy is performed in cases of local primary neoplasms, such as chordoma, chondrosarcoma, giant cell tumor, osteosarcoma and invasive or recurring rectal tumors¹²⁻¹⁴. These operations result in large surgical wounds, which bring the challenge of local reconstruction to the surgeon. The extensive tissue removal, the lack of local muscular aponeurotic tissue, the difficulty to obtain large flaps and preoperative radiotherapy are among the factors involved in the genesis of the condition^{6,15}.

The complications of the sacral coccygectomy include hemorrhage, infection, local healing disorders, change in the pelvic statics and neurological deficit, such as: sexual, vesical and bowel dysfunction^{13,15}. The hernias in this topography constitute a rare complication of this surgical procedure^{2,12}.

Sacrococcygeal hernias are not believed to be only a consequence of the primary reconstruction method¹⁵. The increased abdominal pressure at the immediate postoperative, associated with the gravitational action, would insinuate the bowel loops and the omentum to the pelvis, keeping them in touch with the pelvic floor¹³. Sacrectomy causes lesions on the nervous branches corresponding to the height of the osteotomy. The muscles in the pelvic floor are innervated by sacral branches S2 to S5, whose separation predisposes to muscular atrophy, which favors herniation^{2,13,15}.

Up until now, there is no consensus on the surgical techniques to be employed in order to correct these hernia⁶. The bases to treat sacrococcygeal come from the perineal repair techniques^{3,4}. Balkenende et al¹⁶. Described, in 1996, the first report of coccygeal hernia, after coccygectomy and refractory coccygodynia. Herniorrhaphy occurred due to the approximation and suture of the borders of the hernia ring. Maguina and Kalimuthu¹⁷ reported sacrococcygeal hernia in an elderly patient with sacral pressure ulcer, being submitted to debridement. The patches under negative pressure to optimize the healing were pointed as the causers of the formation of a hernia bag and rectal protrusion.

The second report of coccygeal hernia is from 1988, which is the first case in which the polytetrafluoroethylene prosthesis (PTFE) was used¹¹ to correct the hernia defect. Chernyi et al.¹⁸, in 1988, described the first sacral hernia repair by means of superimposing tissue sutures by local access. The use of non absorbable mesh in sacral hernias (polypropylene) was only described eight years later¹⁴. Cancrini et al.¹⁹, in 1997, report the first use of an absorbable prosthesis (polyglactin) in sacral hernias. As observed, there are different techniques described to correct this defect, which leaves many doubts to the surgeon.

The objective of this article is to describe a patient submitted to surgical repair of a sacrococcygeal hernia by placing the PTFE mesh associated with V-Y myocutaneous flaps, emphasizing the technical details and showing the great challenge that is such a condition for the colorectal surgeon.

CASE REPORT

A 68-year-old female patient, complaining of painful protrusion in the sacrococcygeal region starting four years ago. She mentioned coccyx resection and, afterwards, partial sacrectomy five years ago to treat for coccygodynia refractory to clinical treatment by the orthopedics service. She reported that 30 days after the last surgery, there was a clinically suspected abscess and the site was punctured and fecal content was vacuumed. At inspection, she presented with a scar in the sacrococcygeal region and local bulge, especially to the Valsalva maneuver (Figure 1). Digital rectal exam showed a normotonic anal sphincters, no

bleeding or anorectal tumors. The exam also showed a protrusion in the posterior wall due to the sacrococcygeal defect, being a part of the hernia sac content. At the anoscope and rigid proctosigmoidoscopy, the rectal mucosa was normal; in the anal canal, only first degree internal hemorrhoids were found.

Computed tomography of the pelvis showed the densification of perirectal fat and protrusion of the posterior rectal wall to the sacral region (Figure 1). Surgical treatment was performed by the posterior approach (sacrococcygeal), with the patient in ventral decubitus position (penknife position) under spinal anesthesia (Figure 2). It began by the removal of the scar covering the surgical wound, followed by dissection, isolation and opening of the hernia sac. Through the hernia ring, a PTFE mesh was introduced and fixated with absorbable suture (polyglactin 2.0) inside the hernia defect. The synthesis of the surgical wound was performed by the superimposition of superjacent tissues and the creation of V-Y bilateral myocutaneous advancement flaps (gluteus), sutured with 3.0 nylon. A closed suction drain was used below the flap to drain any possible accumulated fluid collection. Post-operative evolution was excellent, without complications. The patient has been on outpatient follow-up, without recurrence, for 36 months.

DISCUSSION

The treatment for perineal hernias, which is a more common condition, served as a base for the

treatment of this sacrococcygeal herniation^{3,4}. Three accesses are described: perineal (local or sacrococcygeal, for sacrococcygeal hernia), abdominal and combined abdominoperineal. The repair *per se* can be performed by the simple suture of the hernia ring¹⁵; the use of prosthesis (absorbable or non absorbable meshes)¹⁴; and the mobilization and fixation of structures placed on the pelvis, such as bladder, uterus¹³ or omentum¹. Myocutaneous flaps can be used¹², such as: gluteus maximus muscle^{6,7}, rectus abdominis muscle²⁰, thigh muscles (vastus lateralis or gracilis)²¹. This range of reconstructive techniques demonstrates the real challenge in the treatment of such condition.

The local or sacrococcygeal access is interesting because it prevents the penetration of the abdominal cavity. However, exposure is limited, which can make it difficult to evaluate recurrent disease in cases of neoplasm and to mobilize adhesions from the bowel and the hernia sac¹³. Zook et al.⁷ reported a case of coccygeal hernia submitted to herniorrhaphy with sacroperineal access using a prosthesis, presenting with local recurrence caused by possible technical issues. The second repair on the same topography received a PTFE prosthesis, and there was no success due to local infection. The referred causes for hernia recurrence are factors that are possible to prevent, and also because they exist regardless of the access or repair technique, thus not being exclusive to the sacrococcygeal access.

The abdominal access is useful in patients submitted to previous oncological operations, in the evaluation

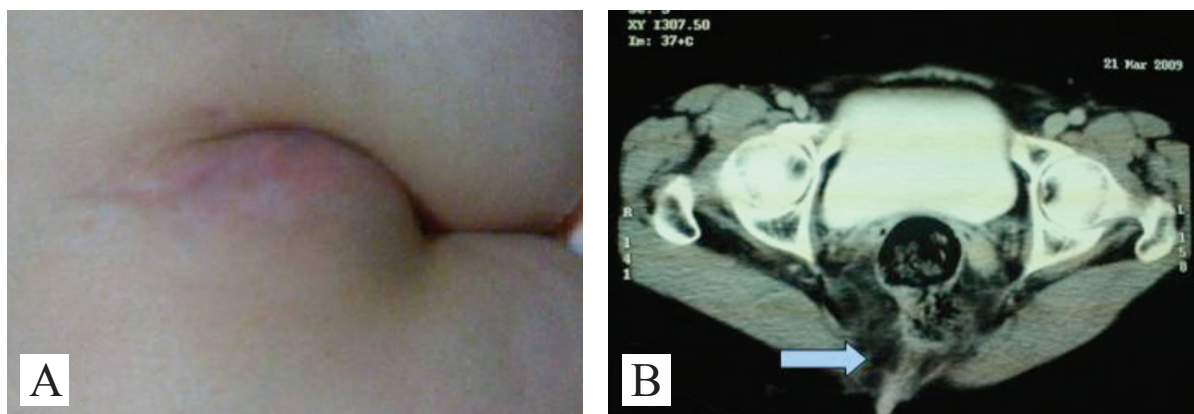


Figure 1. (A), patient in dorsal decubitus seen from the sacral region; and the local bulge caused by the sacrococcygeal hernia. (B), computed tomography showing rectal protrusion by the sacrococcygeal defect (indicator).

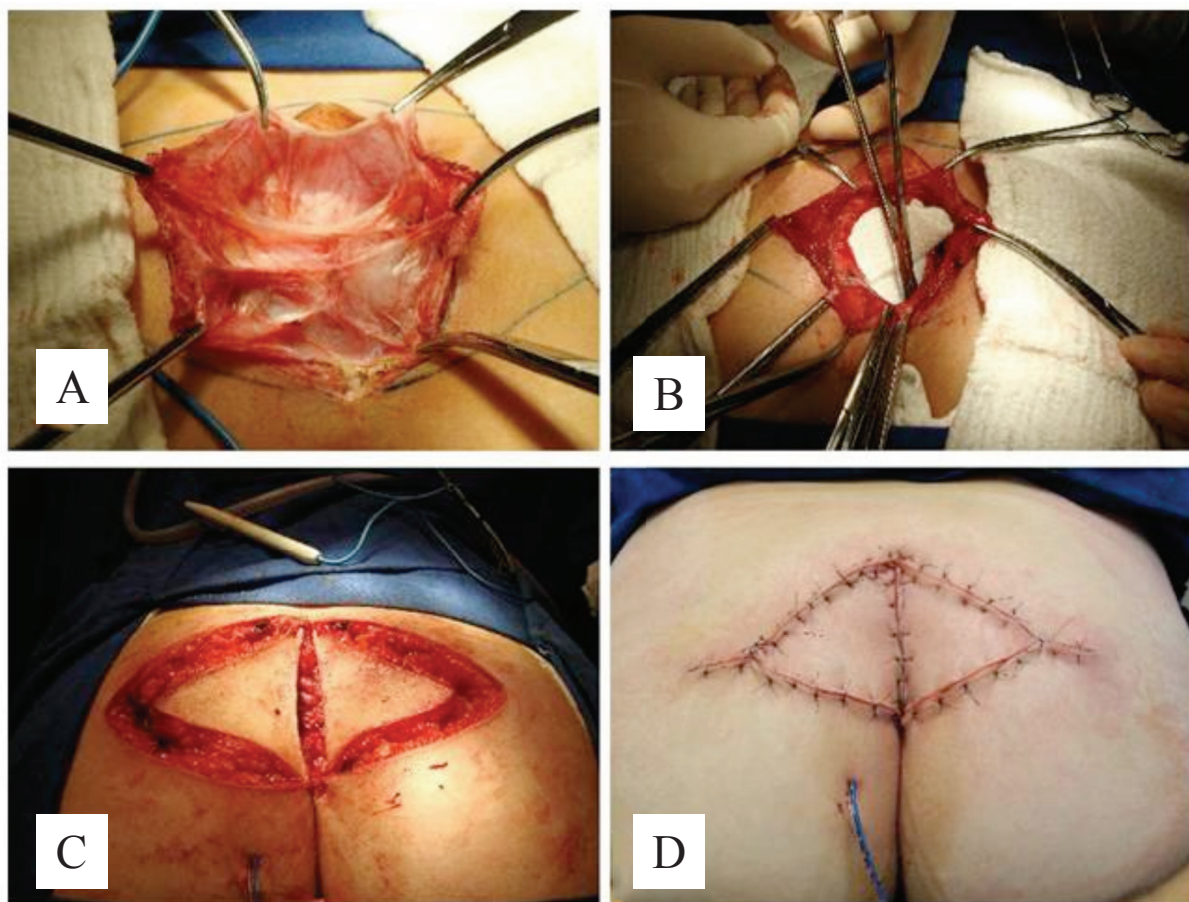


Figure 2. Aspects of the surgical technique: (A) exposure of the hernia bag with tweezers; (B) polytetrafluoroethylene mesh is adjusted to the sacroccocygeal defect and fixated to the borders of the hernia ring; (C) after the suture of the mesh and the synthesis of superjacent plans, the V-Y myocutaneous advancement flap is prepared; (D) final aspect of the sacroccocygeal herniorrhaphy.

of recurrence and in those who need laparotomy due to other indications. The access to the pelvis enables the fixation of the prosthesis to the pelvic ring from the inside of the abdominal cavity, with direct vision¹³.

The combined abdominoperineal access, considered as gold standard, allows the complementary, abdominal and perineal intervention, which is useful for cases associated with important technical difficulty, such as intense adherence between abdominal and pelvic structures and with the hernia bag. Repair is made possible by both accesses, suggesting lower risk of recurrence⁶.

There are many descriptions of primary reconstruction after sacral coccygectomy, including case series, and there is no established consensus for the most adequate technique.

Miles et al.⁶, after a retrospective analysis of 27 primary repairs with myocutaneous flaps, proposed three technical options. One of them indicates that for patients who were not submitted to radiotherapy and those with an intact vascularization of the gluteal region, the V-Y bilateral gluteus maximus myocutaneous advancement flaps should be considered, which is well accepted because of the possibility to cover a great area of the subcutaneous mesh and because it is close to the resected area^{1,22}. This technique was chosen for the case reported in this study, due to the patient's history and characteristics.

In cases submitted to previous radiotherapy or with vascular lesions of the gluteal region, the vertical rectus abdominis myocutaneous flaps are a good option. The contraindications for abdominal flaps are

history of laparotomy or previous ostomies; in such cases, crural flaps can be used⁶.

Kaplan and Santora¹⁴, in 1996, described the first use of non absorbable mesh to repair sacral hernias. They suggested the use of prostheses for cases in which large resection prevented the approximation of tissues that compose the hernia ring and when there were contraindications for the creation of bilateral gluteus maximus myocutaneous advancement flaps (radiotherapy and with vascular lesions of the gluteal region). Polypropylene meshes were used and fixated with sutures made of the same material in the borders of the hernia ring, approximation of the gluteus with continuous suture and absorbable sutures and cutaneous synthesis with intradermal stitch with absorbable material.

After reports of enterocutaneous fistula in patients with non absorbable meshes¹, the use of a polypropylene mesh with the abdominal side covered with myofascial tissue (sublay technique) was proposed, or also the application of the PTFE mesh, polyester cover, acellular human dermal matrix or animal submucosa (onlay technique), aiming to avoid adherence with the bowel^{2,11}. Korn et al.¹ considered the relative rigidity of polypropylene meshes and the possibility of enteric erosion when the material is in direct contact with intestinal loops. They described the use of acellular human dermal matrix, which keeps the structure

of the basement membrane, with collagen and elastin fibers, in order to shape the local tissue growth. Due to the fragility of this material, it is used as adjuvant to hernia repair, and not as an isolated technique.

In this case, the indication for sacral coccygectomy was the coccygodynia refractory to clinical treatment. Since the primary disease that motivated this resection was benign, the sacrococcygeal access was chosen (local). The existence of a posterior rectal wall composing the hernia sac led to the use of a PTFE mesh to avoid rectal erosions and the consequent development of complex enteric fistula. The intention to complement the application of the prosthesis led to the V-Y bilateral gluteus maximus myocutaneous advancement flaps, with the proper occlusion of the cutaneous defect and important cosmetic increment. The patient has been on outpatient follow-up with no suggestive signs or symptoms of local recurrence.

The wide experience in the use of absorbable or non absorbable prostheses (mesh) to repair different types of hernia, their easy application, low complication rates and good results make them an important option in the treatment and prevention of sacrococcygeal hernias, which correspond to a significant challenge to the coloproctologist. The knowledge of the existing techniques enables to choose them wisely, thus reducing the morbimortality of the procedure and benefiting the patient.

REFERENCES

1. Korn JM, Connolly MM, Walton RL. Single-stage sacral coccygectomy and repair using human acellular dermal matrix (AlloDerm) with bilateral gluteus maximus flaps for hernia prophylaxis. *Hernia* 2009;13(3):329-32.
2. Al-Haddad AA, Hellinger MD, Akerman SC. Surgisis mesh repair of a postsacrectomy perineal hernia along with posterior proctosigmoidectomy for concomitant stricture. *Am Surg* 2007;73(11):1129-32.
3. So JB, Palmer MT, Shellito PC. Postoperative perineal hernia. *Dis Colon Rectum* 1997;40(8):954-7.
4. Rayhanabad J, Sassani P, Abbas MA. Laparoscopic repair of perineal hernia. *JLS* 2009;13(2):237-41.
5. Salum MR, Prado-Kobata MH, Saad SS, Matos D. Primary perineal posterior hernia: an abdominoperineal approach for mesh repair of the pelvic floor. *Clinics* 2005;60(1):71-4.
6. Miles WK, Chang DW, Kroll SS, Miller MJ, Langstein HN, Reece GP, et al. Reconstruction of large sacral defects following total sacrectomy. *Plast Reconstr Surg* 2000;105(7):2387-94.
7. Zook NL, Zook EG. Repair of a long-standing coccygeal hernia and open wound. *Plast Reconstr Surg* 1997;100(1):96-9.
8. Chueire AG, Carvalho Filho G, Souza LB. Coccigodinia: Tratamento cirúrgico. *Acta Ortop Bras* 2002;10(4):26-30.
9. Cebesoy O, Guclu B, Kose KC, Basarir K, Guner D, Us AK. Coccygectomy for coccygodynia: do we really have to wait? *Injury*. 2007;38(10):1183-8.
10. Kumar A, Reynolds JR. Mesh repair of a coccygeal hernia via an abdominal approach. *Ann R Coll Surg Engl* 2000;82(2):113-5.
11. García FJ, Franco JD, Márquez R, Martínez JA, Medina J. Posterior hernia of the rectum after coccygectomy. *Eur J Surg* 1998;164(10):793-4.
12. Lehto SA, Vakharia MR, Fernando TL, Mohler DG. Polypropylene mesh repair of sacroperineal hernia following sacrectomy with long-term follow-up. A case report and literature review. *Bull Hosp Jt Dis* 2000;59(2):113-5.
13. Atkin G, Mathur P, Harrison R. Mesh repair of sacral hernia following sacrectomy. *J R Soc Med* 2003;96(1):28-30.
14. Kaplan LJ, Santora TA. Technique of sacral repair. *Am Surg* 1996;62(9):762-4.

15. Junge K, Krones CJ, Rosch R, Fackeldey V, Schumpelick V. Mesh reconstruction preventing sacral herniation. *Hernia* 2003;7(4):224-6.
16. Balkenende U, Van Leeuwen BP, Ginai AZ. Hernia through a scar on the posterior rectal wall. *Eur J Surg* 1996;162(4):347-8.
17. Maguina P, Kalimuthu R. Posterior rectal hernia after vacuum-assisted closure treatment of sacral pressure ulcer. *Plast Reconstr Surg* 2008;122(1):46e-7e.
18. Chernyi VA, Shchepotin IB, Klochko PI, Palivets AI. A method of plastic surgery in postoperative sacro-perineal hernia. *Vestn Khir Im I I Grek* 1998;140(5):88-9.
19. Cancrini A, Bellotti C, Santoro A, Ascenzi P, Cancrini G. Postoperative sacrocele: prevention and surgical considerations. *G Chir* 1997;18(10):488-92.
20. Glatt BS, Disa JJ, Mehrara BJ, Pusic AL, Boland P, Cordeiro PG. Reconstruction of extensive partial or total sacrectomy defects with a transabdominal vertical rectus abdominis myocutaneous flap. *Ann Plast Surg* 2006;56(5):526-30.
21. Wong S, Garvey P, Skibber J, Yu P. Reconstruction of pelvic exenteration defects with anterolateral thigh-vastus lateralis muscle flaps. *Plast Reconstr Surg* 2009;124(4):1177-85.
22. Bebenek M. Abdominosacral amputation of the rectum for low rectal cancers: ten year experience. *Ann Surg Oncol* 2009;16(8):2211-7.

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