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Original Article

Deoti surgical flap and sphincteroplasty for treatment of severe perineal deformity

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ABSTRACT

Purpose: Anal incontinence is a very stigmatizing condition, which affects biopsychosocially the patient. It is a neglected, but quite common complication of obstetric and anorectal surgery, however it has treatment options. None of the treatment options have exceptional efficacy rates and still associated with risk of recurrence. The surgery techniques known are: anterior and posterior shortening procedure; post-anal repair; anterior elevator plasty and external sphincter plication; total pelvic floor repair and sphincter repair. None of them use a flap rotation of adipose tissue. The purpose is to propose a new surgery technique of anal sphincteroplasty, which uses flap rotation, for severe perineal deformity associated with anal incontinence.

Methods: Patient with severe perineal deformity and anal incontinence treated with a new surgery technique of sphincteroplasty with flap rotation.

Results: The severe perineal deformity was corrected with both esthetic and functional results. Anal continence measured by Wexner and Jorge assessment in a follow-up period of 2 years after the intervention. Pictures and video show esthetic and functional aspects.

Conclusion: This is the first time that a flap rotation is used to treat a severe perineal deformity. And the technique presented promising outcomes, which allows perineum reconstruction that is similar to the original anatomy. Therefore, this technique is justified to better evaluate its efficiency and the impact on patients' prognosis.

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Retalho cirúrgico de Deoti mais esfincteroplastia para tratamento de deformidade perineal grave

Palavras chave:
Cirurgia colorretal
Retalhos cirúrgicos
Incontinência fecal
Resultado do tratamento

RESUMO

Objetivo: A incontinência anal é uma condição muito estigmatizante, que afeta biopsicossocialmente o paciente. É uma complicação negligenciada, mas bastante comum da cirurgia obstétrica e anorretal, no entanto, tem opções de tratamento. Nenhuma das opções de tratamento tem taxas de eficácia excepcionais e ainda está associada ao risco de recorrência. As técnicas cirúrgicas conhecidas são: procedimento de encurtamento anterior e posterior; reparação pós-anal; plástica do elevador anterior e plicatura externa do esfíncter; reparo total do assoalho pélvico e reparo do esfíncter. Nenhum deles utiliza uma rotação de retalho de tecido adiposo. O objetivo é propor uma nova técnica cirúrgica de esfincteroplastia anal, que utiliza a rotação de retalho, para deformidade perineal grave associada à incontinência anal.

Métodos: Paciente com deformidade perineal grave e incontinência anal tratada com nova técnica cirúrgica de esfincteroplastia com rotação de retalho.

Resultados: A deformidade perineal grave foi corrigida com resultados estéticos e funcionais. Continência anal medida pela avaliação de Wexner & Jorge em um período de seguimento de 2 anos após a intervenção. Imagens e vídeo mostram aspectos estéticos e funcionais.

Conclusão: Esta é a primeira vez que uma rotação de retalho é usada para tratar uma deformidade perineal grave. E a técnica apresentou resultados promissores, o que permite a reconstrução do períneo semelhante à anatomia original. Portanto, esta técnica é justificada para melhor avaliar sua eficiência e o impacto no prognóstico dos pacientes.

Introduction

Anal incontinence is the lack of ability to voluntarily control flatulence and feces. This is a symptom which reflects a neglected but quite common complication of obstetric and anorectal surgery. It is a very stigmatizing condition and causes immeasurable negative impact on quality of life, such as disturbance of emotional balance, of social relations, of labor relations, total loss of self-esteem and depression. The patient hides this social embarrassment and faces a social isolation, which worsens with the perineal deformity. Being ashamed to talk about it and ignorant of the treatment possibility, one does not seek care. The patient presents three main complaints: "soiling" (dirt), which is a constant perianal humidity; the unconscious incontinence (passive), when the patient realizes that there has been a loss of content through smell, itching, discomfort or moisture; and incontinence as a matter of urgency, when the patient is unable to inhibit the willingness to evacuate.[1,2]

The clinical treatment is the primary option for managing anal incontinence, while the sphincteroplasty is a surgical option and there is hesitation to indicate this procedure. Firstly, because the clinical treatment presents good results and 50–70% of the patients have anal function recovery and life quality improvement. Secondly, because the aim of the surgery is to restore the anatomy, not the function. Thirdly, this is a very delicate and complex procedure. And fourthly, the surgical treatment of this condition is still associated with the risk of recurrence or maintenance of incontinence. The anal sphincteroplasty is often one of the only treatments available. Shows good results in the short term, but there is a decline over time.[2]

The purpose of this article is to propose a surgical technique for reconstruction of perianal severe anatomical deformities.

Methods

The method is an experimental surgery technique of sphincteroplasty with flap rotation for severe perineal deformity associated with anal incontinence in a female patient with severe fecal incontinence. This new technique was developed at the time of surgery and an informed consent provided by the patient approved the procedure and the photographs taken. The photographs and videos do not allow the patient's identification.

Patient

Female, 32 years, was firstly seen at the colorectal surgery clinic, Faculty of Medicine of Federal University of Minas Gerais, complaining of gas and feces incontinence and chronic pain in right buttock (Wexner and Jorge[3] of 20). Severe anal deformity can be seen, with irregular and extensive perianal scar tissue as shown in the video (Video 1). She was submitted to 17 operations for drainage of perianal abscess and complex fistula treatment since she was 15 years old. Her previous story shows diagnosis of fibromyalgia and

prolactinoma. Previous surgeries: oophorectomy for teratoma, c-section after going into labor (first pregnancy). Family history is negative for colorectal cancer and inflammatory bowel disease. A colonoscopy was made and it was normal. Magnetic resonance imaging of the pelvis showed distortion and asymmetry of the anus lifter muscle, with presence of a cyst (1.5 cm × 1.2 cm), located posterior to the rectus, 3 cm far from anal edge. The anorectal manometry showed low rest pressures, satisfactory contraction pressures, radial contraction asymmetry and good tolerance to balloon inflation. Endorectal ultrasound identified a residual cyst in soaring muscles of the anus (right posterolateral position), atrophy of the left lateral pillar of puborectalis muscle, with diffuse hypocontractility, external sphincter muscles totally changed, with areas of greater and lesser thickness, with more significant tapering on the left side, with loss of up to 80% of the thickness. The remainder of fibers presented loss of parallelism and hypocontractility. No exam revealed active fistula or Crohn's disease. The proposed treatment was the sphincteroplasty with skin flap rotation.

Technique

Preoperative mechanical bowel preparation was conducted on the operation's eve. The administration of antibiotics prophylactically was made according to the Protocol of the Hospital Infection Control Committee (HICC). The surgery was made with the patient under spinal anesthesia. On the day of the procedure, the patient was submitted to urethral catheterization with a foley catheter and positioned in prone-jackknife position. The buttocks were displaced. The incision was posterior perianal, held in circular manner, respecting the limit of 180° to 200°, in order to avoid injury of the terminal branches of the pudendal nerve as in the electronic supplementary material (Video 1). At this point the mucosa is without support and a certain degree of prolapse occurs. The mucosa was then released from the internal sphincter and from the surrounding fibrosis. The perianal skin was lifted as the next step and after that the integrate sphincter was identified laterally to the fibrotic tissue. The sphincter was separated from the fibrosis with extra care not to dissect too laterally, because the nervous supply to the external anal sphincter muscle comes in at this point. A nerve stimulation may be used to identify the terminal portion of the pudendal nerve if an extensive dissection is necessary. This lateral dissection allowed reaching the external anal sphincter (EAS) with a good blood supply. The plan between the two sphincters (external and internal) was achieved and penetrated bilaterally until reaching the fibrotic tissue in the middle line, separating completely the EAS of the internal anal sphincter (IAS). In this patient, a cyst was curetted and the puborretal muscle was released from the fibrosis to which it was adhered. Once the mucosa was completely dissected from the fibrotic tissue, it was enabled extremely careful dissection of the lateral aspect of the healthy muscle to provide a free flap of about 1.5 cm. During the dissection, it is found two arms of the subcutaneous portion of EAS.

Firstly, the IAS was sutured. The sectioned end of the inner face of the fibrotic tissue is sutured to the inner face of the muscle, and the most superficial fibrosis face is sutured to the more superficial muscle face. All points are knotted after the passage of wires in anterior–posterior direction in order to reduce its diameter, which is approximately enough to firmly position the surgeon's index finger. It was used simple knots and a polyglactin 910 wire (surgeon's preference). The goal is to do a repair that is not too tight. Following, the overlapping of the EAS subcutaneous portion, including the superficial portion, is performed.

After finishing the sphincter repair, the mucosa must be sutured to the ANODERMA to avoid the anal mucosa retraction. The mucous membrane should not be directly sutured to the skin to avoid ectropion and chronic humidity. Then the skin is not approximated by primary suture, because under it there is the sutured muscle and an empty space where a big important fibrosis can arise. The scar tissue was totally removed, forming a defect with large diameter (see Video 1, which shows the step by step of the surgery till the scar tissue removal, before flap rotation planning).

A flap of skin accompanied by lush subcutaneous tissue was made. After rotating and advancing the flap, its skin was sutured with the borders of the wound and, the subcutaneous filled all the empty space and covered the sutured muscles and the overlapping. In addition, the points were made separated to enable drainage, avoiding accumulation of secretions. A Penrose drain was placed for any seroma that might collect (see Video 2, which describes the principles, the planning and the step by step of the flap rotation).

Results

The post-op period developed properly as expected. The perceived complications were: in the second post-op day (POD) local pain occurred and difficulty to evacuate; in the third, the patient reported a sensation of blocked evacuation, but the digital rectal examination revealed no obstruction or stenosis; in the fourth POD, was able to evacuate, but it was painful. There were no more complaints on the following day and, at the 8th POD, patient was discharged. After two years of follow-up (see Video 3, which shows the outcome of the surgery after 6 months of follow-up and the sphincter contraction after two-year-follow-up), the patient remains well with Wexner and Jorge[3] of 7.

Discussion

Sphincteroplasty is an effective procedure to treat anal incontinence. Since 1971, when Parks et al.[4] described the technique for the first time, efforts have been made to improve it, which was accomplished by Slade et al. in 1977.[5] This new technique has a satisfactory short-term success rate. However, when monitoring is carried out for a longer period of time, about ten years after the surgery, the functional result declines considerably.[2] Despite the continence is not total, the patient is still satisfied with the procedure's result, because there is clinical improvement compared to the preoperative condition.[4,5]

However, some questions remain. For example: which is the best technique for surgically correcting the injured sphincter? What is the best indication for surgical treatment? What is considered as success in the treatment of anal incontinence?

Is the currently used criteria (it vary a lot in the works published until now) ideal to define the success of the procedure? Is it justifiable to conduct an operation, which does not sustain long-term results?

A survey of 182 patients who underwent conventional sphincteroplasty showed that in the first three years after surgery, 18% of the patients did not present anal incontinence, 25% reported incontinence only for gas, 19% claim only dirt and 36% have solid stool incontinence. Those numbers, when measured on a ten-year monitoring, fall to 6%, 16%, 19% and 57%, respectively. These results confirm that the technique currently used presents a drop in effectiveness when the follow-up period is longer.[1] On the other hand, an interesting fact concerns the life quality of patients after the surgical procedure. Despite the problem in keeping good results after long post-op time, when the FIQLS questionnaire (Fecal Incontinence Quality of Life Scale) is applied, the patients claim that the continence is better than it was before the procedure and about 75% of patients feel satisfied with the surgery. This result is very related to the life quality prior to the procedure, which was very bad, making any progress on patient's continence a considerable improvement in quality of life. In addition, the patients' response to this questionnaire proved that anal incontinence has a large negative effect on the quality of life.[1]

There is still no explanation for this long term failure to occur, however, two factors have been identified as predictors of failure: the worse functional result in the short term and age. It was shown that patients who presented a better result at short term were less likely to evolve to incontinence. Similarly, older patients had greater chance to become incontinent again. The reason for this association is still unknown, but it is believed that the loss of muscle strength by aging of the tissue is the main factor.[1] Studies differ about the relation of preoperative physiology, i.e. assessment of the pudendal nerve function and sphincter contraction force, on predicting long-term continence results.[6,7]

In the studies that link these predictors, there is no questioning about a possible relationship between the surgical technique and the sudden drop of long-term efficiency. The surgical technique used is the same since 1977, therefore there is no basis for comparison.

The sphincteroplasty has acceptable functional results as long as the location of the operation does not infect. It is the procedure of choice for the partial or complete damage of the external anal sphincter. We believe that the flap rotation should be done in cases of severe perineal deformity, i.e. poor perineal body, presence of large empty space after sphincter repair and excessive loss of skin or extensive devitalized scar skin.

In the plastic surgery, the greater the anal defect the bigger the empty space, which is replaced by a large amount of fibrosis.[4,5]

The formation of scar tissue is crucial to the success of the surgery, because it is necessary to prevent suture dehiscence, which is the reason why the predecessors of Parks et al. failed.[4] However, an extensive fibrotic formation takes a space that should be occupied by muscle, causing reduced strength in local contraction, possibly being one more reason for the long-term failure. Another factor for this decreased ability to contract is the adherence of the fibrosis into the muscle tissue. The formation of fibrotic tissue naturally occurs as part of the healing process after procedures such as episiotomy and this fibrosis may cause function impairment of pelvic floor muscles. Despite the vast majority, skeletal muscle injury recover without this harmful fibrosis formation, the proliferation of myofibroblasts may be excessive in large or repeated trauma, such as repeated episiotomies and surgical treatment of anal fistulas, resulting in the formation of dense scar tissue that restricts the regeneration of myofibrils.[8]

In recent years, research has shown that subcutaneous fat contains many stem and regenerative cells, which are important for revascularization and survival of the damaged tissue.[9,10] Until recently, the stem cells were most commonly harvested from the bone marrow or blood of adults, but it was necessary to carry out the culture of these cells due to the low frequency of them in these sources. In the other hand, the regenerative cells derived from adipose tissue are abundant and have the ability to differentiate into different cell types. In addition, there is no need to make a culture of this cells, being possible to remove and use it during the procedure.[8,11–14]

The major indication of this technique is based on these studies. Once the muscle repair is in contact with a healthy subcutaneous tissue, the muscle does not adhere to skin and there is no empty space, which allows a laminar scar tissue. Also, this muscle–fat contact can stimulate the regeneration of myofibrils as subcutaneous tissue is a source of stem cells. Likewise, the regeneration of myofibrils can occur, and consequently better muscle contraction function can be obtained. We believe that this technique is indicated in cases of severe perineal deformities, in which the sphincteroplasty will cause large voids. In addition to all this, the suture is steady and sustained.[8–15]

The skin that covers the defect is healthy and at the late post-op it gets an concentric anal folding that helps to improve the continence. Additionally, there is not a great loss of muscle tissue, which favors a greater contraction force for a longer period for the patient.

Another key issue is to have access to the complete pre-op propaedeutic in order to assess the causes that led to incontinence before the operation, once it is possible to associate different treatments for different causes. This is very important because we know that the success of the operation is greater when you do not have another cause. A study shows that the success of the operation is 62.7% without pudendal nerve injury and falls to 16.7% when this injury is present. The knowledge of the associated causes for the anal incontinence would also be important to correctly indicate the surgery and would avoid proscribing a technique that has acceptable results and rebuilds the anatomy of a functionally important area.[6]

Currently most patients are covered by a single therapy, usually one that is available on the service without being able to consider multiple treatment.

The sacral nerve stimulation (SNS) is another procedure used for treating anal incontinence and brings promising results: after a 114 months follow-up, 48% of patients were fully continent. However, these numbers do not support the replacement of sphincteroplasty for SNS, a fact that suggests the need for a combination of measures. At the present time, SNS is still a very expensive alternative treatment. In addition

to the SNS, biofeedback technique should also be considered. Studies have shown that, on average, biofeedback shows significant reduction of anal incontinence in 62.77% of patients.[16]

Although improving treatment is needed, it is also necessary to invest in prevention. The biggest cause of anal sphincter injury is the birth injury. However, the constipation has been shown as other major cause.[10] Therefore, pelvic floor injury is a preventable problem, for which there are measures to be taken. Thus, identification and treatment of constipation are of utmost importance to prevent the occurrence of anal incontinence. Concerning natural childbirth, a possible prevention method is the perineal massage technique. This technique was proven to avoid pelvic injuries in nulliparous women, who performed the perineal massage. There is a 16% reduction in the incidence of suture requiring pelvic trauma.[9]

It is complex to measure the severity of anal incontinence, its impact on quality of life and post-op functional outcome. So far, no instrument of severity score or QoL assessed is universally accepted. An in-depth discussion of the available classification systems is beyond the focus of this article. The difference of opinion in this matter stems from an absence of level I evidence, from a lack of long-term follow-up and from the inconsistent results and different methods in published studies. However, the rates of occurrence and recurrence of incontinence has prompted the search for more effective methods.

Conclusion

The decline in effectiveness of continence after sphincteroplasty points to the need of improving patient's diagnostic approach and operative technique before abandoning this treatment. Combining different techniques, the long and the short-term results can be improved, making possible a greater quality of life for the patient for a greater period of time.

A case series is currently on follow-up for later publication. This technique presents promising outcomes that need to be further evaluated and justifies the continuity of its use in order to study its efficiency. It allows a perineum reconstruction that is similar to the original anatomy and this fact alone is enough to justify its application. Additionally, the association of different treatment approaches (before or after the surgery) is necessary in cases of multiple etiologies. Thus, the quality of life of patients suffering with incontinence may have a better prognosis.

Conflicts of interest

The authors declare no conflicts of interest.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.jcol.2016.12.002.

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