

RESULTS OF SURGICAL TREATMENT OF ANAL SPHINCTER INJURY FOLLOWING VAGINAL DELIVERY AT HANOI MEDICAL UNIVERSITY HOSPITAL: A CASE SERIES REPORT

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The repair of sphincter injury following vaginal delivery is often inadequate or the injury was undetected. The consequence is fecal incontinence. In this descriptive study, five patients underwent sphincter repair by the “overlap” technique. Evaluation of postoperative outcomes at 3 and 12 months showed that the Wexner fecal incontinence score at 17 - 20 score decreased to 0 - 6 score. Transperineal ultrasound showed that all five patients healed well. Measurement of anal manometry, functional anal canal length, resting anal pressures and squeezing anal pressures was better after surgery.

Keyword: Fecal incontinence, Wexner, technique “overlap”, sphincter injury.

I. INTRODUCTION

Anal sphincter injury is the most common cause of fecal incontinence. In addition, it can also cause a rectal-vaginal fistula, perineal pain, urinary disorders, and sexual dysfunction. All of the above problems create a burden for patients both psychologically, physiologically and socially.^{1,2}

Obstetric complications are the most common cause of sphincter injury. According to the study, in the United State, 2858 women birth vaginally accounted for 17% of cases of anal sphincter injury.³ Data in another study in the United Kingdom show that there are around 40,000 and millions of individuals worldwide suffer from anal sphincter injury as a result of childbirth each year.⁴

In Vietnam, there has been no study to evaluate the rate of anal sphincter injury in

the population after childbirth. The importance of sphincter damage and its consequences has not been sufficiently interested. Patients with obstetric anal sphincter injuries following vaginal delivery are often not detected or incorrectly repaired, which often leads to fecal incontinence.² Moreover, the patients are often embarrassed to see a doctor and suffer silently for a long time, which affects their quality of life.

The purpose of our study was to evaluate the treatment outcome of incontinence due to anal sphincter injury after vaginal delivery.

II. METHODS

All patients with obstetric anal sphincter injury were treated by overlapping sphincteroplasty method at the Department of General Surgery - Hanoi Medical University Hospital from January 2020 to June 2021.

Sampling method: All patients according to the selection criteria were included in the study.

1. Data collection including: Age, cause, duration of illness, classification of clinical sphincter rupture, Wexner’s fecal incontinence

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score and anorectal manometry before – after surgery, classification of sphincter injury on MRI, transperineal ultrasound after surgery.

2. Pre-intervention

On admission, patients were assessed for fecal incontinence based on the Wexner fecal incontinence scale⁵, perineal examination, anorectal manometry and MRI perineal.

3. Surgical procedure

All patients underwent surgical repair of the anal sphincter using the “overlap” technique. Surgical steps:

Step 1: Incision in the perineal skin to expose the two ends of the anal sphincter (Figure 1a).

Step 2: Sphincteroplasty by the “overlap” technique (Figure 1b).

Step 3: Close the perineal skin to create a distance between the rectum and the vagina (Figure 1c).

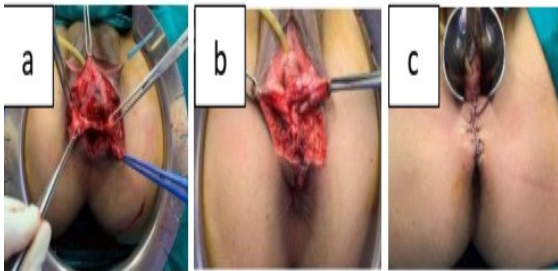


Figure 1. “Overlap” technique to repair anal sphincter injury

At 3 months postoperatively: Patients were assessed for fecal incontinence function based on Wexner’s fecal incontinence scale and anorectal manometry, evaluation of sphincter recovery on perineal ultrasound.

At 12 months postoperatively: Patients were assessed for fecal incontinence function based on Wexner’s fecal incontinence scale.

4. Data processing: By the statistical software SPSS 20.

Categorical date was summarized using the number and percentage of cases. Median and percentages were used to convey values.

5. Research ethics

The process of examining patients according to the procedures of the Ministry of Health, approved by Hanoi Medical University Hospital.

The patient was explained before surgery and consented to the surgery.

The process of medical follow-up and re - examination after surgery was agreed upon by the patient.

All information collected is confidential and only used for research purposes.

III. RESULTS

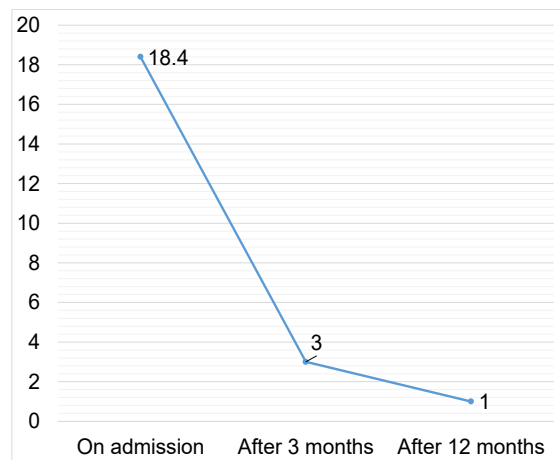


Chart 1. Average score of incontinence of patients on admission and after surgery

In the study, there were five patients age: 28 - 61, with an average age of: 42.2 ± 11.9, presenting for fecal incontinence with liquids and/or solid stools. The duration of the disease rang from 3 to 15 years, and average time was: 8.2 years.

On admission, five patients’ Wexner scores varied from 17 to 20 points, with an average of: 18.4 points.

At three months after surgery: 0 - 6 points, average: 3. There were three patients after 12

months of surgery: 0 - 3 points, average: 1.2; the remaining two patients were less than 12 months after surgery.

Four patients with a history of episiotomy during vaginal delivery and one patient had a natural vaginal delivery. Examination of the perineum showed a variety of lesions with severe sphincter injury of grade 3 and 4. There was one patient with both anal-vaginal fistula.

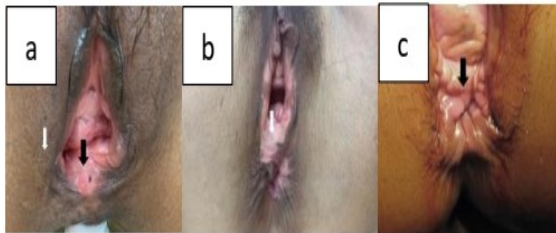


Figure 2. Anal sphincter injury on clinical examination

2a: Grade 3 of anal sphincter tear with anal-vaginal fistula (black arrow) and the old scar caused by episiotomy (white arrow)

2b: Grade 3 of anal sphincter tear – The anterior wall of the rectum and the posterior wall of the vagina are only a thin mucosal flap and the perineal body is pulled to the left side of the patient (white arrow)

2c: Grade 4 of anal sphincter tear with images of communication between the rectal cavity and the vagina (black arrow)

At birth, the children of five patients weighed an average of 4.2 kg, with the patient's child weighing 4.5 kg following a normal vaginal delivery.

On admission, all five patients underwent perineal MRI to assess the extent and morphology sphincter tear, showing anal sphincter tear from grade 3B to 4 (Figure 3a and 3b).

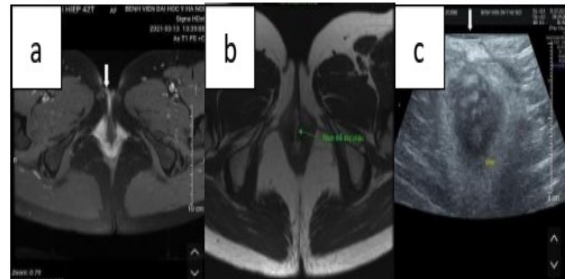


Figure 3. Anal sphincter injury on perineal MRI and recovery of anal sphincter on perineal ultrasonography

3a: Grade 4 of anal sphincter tear on perineal MRI. The internal and external anal sphincter was completely torn to the rectal mucosa, creating a communication between the rectum and the vagina at the 12 o'clock position (white arrow).

3b: Grade 3B of anal sphincter tear on perineal MRI. Completed rupture of the external anal sphincter with the perineal body. The rectal-vaginal wall is still thin (at 12 o'clock position - green arrow).

3c: Grade 3c of anal sphincter tear on perineal ultrasonography, at 3 months of surgery, the recovery was good, and the two ends of the sphincter were connected (at the 12 o'clock position - white arrow).

Table 1. Anorectal pressure

Anorectal manometry	Functional anal canal length (cm)	Resting anal pressure (mmHg)	Squeezing anal pressure (mmHg)
On admission	1.8 - 2.4	18 - 25	45 - 60
At 3 months after surgery	2.7 - 3.9	38 - 60	95 - 120

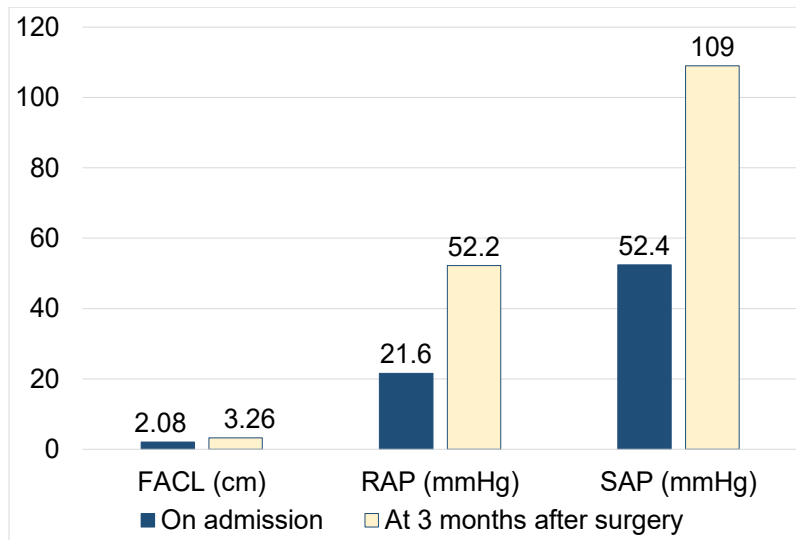


Chart 2. Average anorectal pressure

Time in hospital is 7-10 days, an average: 8,2. Examination of the perineum after 3 months showed that all patients healed well.

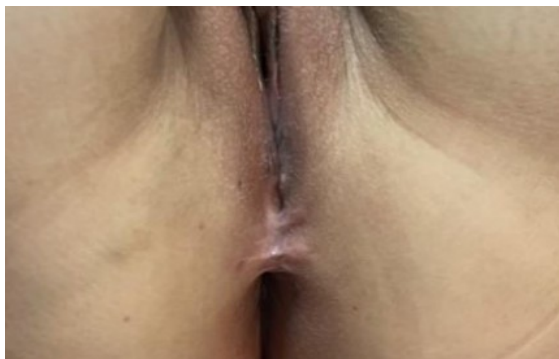


Figure 4. Image of patient's perineum after 3 months. The incision has healed, and the vaginal and rectal walls have thickened

Perineal ultrasound to evaluate anal sphincter healing showed that all five patients had images of sphincter healing on ultrasound.

IV. DISCUSSION

According to various authors, the rate of fecal incontinence in patients with anal sphincter injury classification of grade 3 or higher ranges

from 20% to 60%. Most of them are incontinence to flatus (grade 1). However, these are patients diagnosed with acute obstetric anal sphincter injury and the average age of these patients is 29 years. All of them are of childbearing age.^{6,7} In our study, the mean age was 42.2 years, all patients presented with fecal incontinence with liquids and/or solid stools (at grade 2 and grade 3).

Four patients in the study required episiotomy during birth and were all sutured. The last patient after giving birth, also began to have symptoms of fecal incontinence. The degree of which gradually increased until the incontinence was solid before seeking treatment. Thus, obstetric anal sphincter injury was not detected or repaired incorrectly, resulting in fecal incontinence for a long time until examination. In our study, the duration of illness was from 3 - 15 years, and average time was 8.2 years.

Fecal incontinence due to postpartum anal sphincter injury as result of incorrect diagnosis or treatment, combined with other reasons such as shame, limited understanding, lead to persistent symptoms until it become severe enough to

seek medical attention.

In order to assess the degree of fecal incontinence, many authors have proposed a scale to help evaluate and follow up treatment for patients with fecal incontinence.⁵ In this report, we used the Wexner scale to assess the degree of fecal incontinence for diagnosis as well as follow up treatment. On admission, all patients had incontinence with liquids and/or solid stools (at grade 2 and grade 3). The patient's incontinence score ranges from: 17 - 20 points, average: 18.4 points. After three months, patients had an improvement in fecal function with Wexner score from: 0 - 6 points, and average was 3 points. After one year, Wexner score ranges from: 0 - 3 points, and average was 1 point (Chart 1). With the evaluation by points, we can assess the patient specifically before and after treatment. However, the disadvantage of using assessment the scale point for us to know the specific symptoms encountered after treatment.

According to many authors, the cause of sphincteric injury is episiotomy during delivery, followed by surgical interventions at delivery such as vacuum or forceps, significant birth weight ($P \geq 4\text{kg}$)...^{7,8} According to Nazir et al, 47% of patients with postpartum sphincter injury are episiotomy, 30% are vacuum and 7% are forceps.⁷ In our patient group, 4/5 patients had an episiotomy during childbirth, and one patient had a baby weighing 4.5kg.

Clinical examination of the perineum showed a variety of lesions, and patients may have old scars due to episiotomy, thin rectal-vaginal wall, even accompanied by rectal-vaginal fistula. There were four patients with grade 3 sphincter tear in the study group, including one patient with rectal-vaginal fistula. The last one had a grade 4 sphincter tear with a loss of the rectal-vaginal separation (Figure 2c). In the study of Cook et al,

all four patients with sphincter tear were grade 3.⁹

MRI scan of the perineum will help to accurately assess the extent of sphincter injury, and at the same time help to investigate other pathologies such as pudendal nerve injury or fistula - para anal abscess, thereby providing a suitable treatment strategy for the patient.² The group of patients in our study had anal sphincter tear from grade 3B to grade 4 (Figure 3a and 3b). This grade also corresponds to the clinical examination of third and four degree sphincter injury.

Anorectal manometry is considered the gold standard in diagnosing anal sphincter function.^{2,10} For patients with anal sphincter injury, parameters such as functional anal canal length, resting anal pressure and squeezing anal pressure help assess the function of sphincter injury. For Vietnamese women, the length of the functional anal canal (cm): 2.4 - 4.0, average: 3.1; resting anal pressure (mmHg): 40.2 - 78.8, average: 57.6; squeezing anal pressure (mmHg): 78.3 - 245.3, average: 142.2.¹⁰ In our group of patients, the initial functional anal canal length, anal pressure at rest and squeeze are lower than those of normal people (Table 1). However, three months after surgery, these indicators rose almost equal to normal (Tables 1 and Charts 2).

Perineal ultrasound although not as specific as MRI or anorectal ultrasound.² But this is a less invasive and economical method, so we evaluate the postoperative sphincter healing. Thereby, all five of our patients have good anal sphincter healing results (Figure 3c).

However, the limitation of our study is the small number of patients, and the short study period.

V. CONCLUSION

Postpartum anal sphincter injury is often not correctly diagnosed or repaired, leading

to long-term consequences for patients such as fecal incontinence. Sphincteroplasty is a treatment with good results. Early results were no complication. The lasting results show that the patient's bowel function is good.

Abbreviation: functional anal canal length (FACL), resting anal pressures (RAP), squeezing anal pressures (SAP).

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