Additional secure circular suture during sphincteroplasty — preliminary results on the efficacy of fecal incontinence surgery in urogynecological patients

Aneta Adamiak-Godlewska¹, Katarzyna Skorupska¹, Katarzyna Romanek-Piva¹, Jacek Piłat², Tomasz Rechberger¹

¹II Chair and Department of Gynaecology, Medical University of Lublin, Poland
²I Chair and Department of General and Transplant Surgery and Nutritional Treatment, Medical University of Lublin, Poland

ABSTRACT

Objectives: The paper is a ten case series study presenting women with complex pelvic floor disorders involving fecal incontinence (FI) with stress urinary incontinence or pelvic organ prolapse. Our study aimed at ascertaining whether FI-induced sphincteroplasty with an additional secure circular suture around the external anal sphincter muscle (EAS) may improve long term success rates.

Materials and methods: Twelve patients had scheduled urogynecological surgery and overlapping sphincteroplasty with the placement of an additional circular suture around the EAS. Of these, the status of ten women was established by way of the Cleveland Clinic Fecal Incontinence Score/Wexner Score before and about 70 months after surgery.

Results: Statistical analysis of fecal incontinence score showed that patients were not completely cured from FI, but were significantly better (p = 0.011).

Conclusions: A circular secure suture around the external anal sphincter in FI patients may help to improve anal sphincter function.

Key words: fecal incontinence; pelvic organ prolapse; urinary incontinence; sphincteroplasty

INTRODUCTION

Women fecal incontinence (FI) due to obstetric injuries and "end-to-end" or an "overlap" sphincteroplasty the most commonly used surgical techniques to fix the problem. Post-operative complications are generally low, but success declines with post-procedure time. Indeed, only 28% were continent at 40 months in one study [1] and predicted median time to FI relapse post-sphincteroplasty is five years [2]. If an end-to-end repair is performed after a significant delay from primary injury, outcomes are poorer than an overlapping repair. Outpatient clinic data reveal FI prevalence of 5.6% in the general population and 15.9% in urogynecological patients [3]. Herein, some patients also needed surgery because of vaginal or uterine prolapse or stress urinary incontinence (SUI).

Objectives

Our study aimed at ascertaining whether FI-induced sphincteroplasty with an additional secure circular suture around the external anal sphincter muscle (EAS) may improve long term success rates.

MATERIALS AND METHODS

The study group consisted of 12 urogynecological patients afflicted with FI because of EAS injury — (Tab. 1). All patients provided informed consent to participate in the study, and the study was approved by the Medical University Ethical Board.

FI severity was evaluated via Cleveland Clinic Fecal Incontinence Score (CCFIS)/Wexner Score pre-/post-surgery. The summary score is derived from 5 parameters, the fre-
quency of which is ranked on a scale from 0 (= absent) to 4 (daily): incontinence to solid stool, to liquid stool, or to gas, need to wear a pad, and lifestyle changes. A score of 0 means perfect control, a score of 20 complete incontinence [4]. EAS defect was confirmed preoperatively by endoanal ultrasound. 3D volumes were obtained by using a 360° mechanical rotational probe with the automatic 3D acquisition (type 2052, Ultraview-800; BK-Medical), at a frequency of 13 MHz. All women had scheduled urogynecological surgery and overlapping sphincteroplasty [5, 6] with the placement of an additional circular suture around the EAS to secure proper tension-free healing of the muscle – Figures 1, 2, 3. Briefly, a perineal incision was used with inverted-U incision at the outer edge of the external sphincter of up to 180° to allow healthy muscle exposure (Fig. 1). The sphincter muscle was then mobilized from the fatty tissue, and the severed ends were reapproximated en bloc with both the internal and the external sphincter by way of placement of, typically, 4–6 slow reabsorbing sutures. In such surgery, the incision should not be extended passed 180° to avoid pudendal nerve injury. In the more common delayed repair, scar tissue which bridges the sphincter's distracted ends is maintained in situ while the sphincter muscle's severed ends are overlapped and held with long-term absorbable suture in a horizontal mattress fashion (Fig. 2). This repair lengthens the perineal body and the perineal incision comes together in a Y-shaped formation so that the incision mid-portion is left open for drainage. Next, the skin beneath the anus is incised minimally and a circular secure suture (similar to Shirodkar cervical cerclage - Ethibond-Excel 5, needle 55) is placed around the EAS (Fig. 3). A distal anterior levatorplasty is also performed to augment its function.

**Table 1. Characteristics of the patients.** Surgery procedures: 1 — T-sling; 2 — TVM anterior; 3 — TVM posterior; 4 — distal levatorplasty; 5 — sphincteroplasty with circular suture; 6 — total vaginal hysterectomy.

<table>
<thead>
<tr>
<th>No</th>
<th>Initials</th>
<th>Age (years)</th>
<th>BMI (kg/m²)</th>
<th>No of vaginal deliveries</th>
<th>No of cc</th>
<th>Clinical diagnosis</th>
<th>Surgery</th>
<th>Observation time (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SL</td>
<td>54</td>
<td>28.3</td>
<td>3</td>
<td>0</td>
<td>POPQ IIIaIIp, FI</td>
<td>1, 4, 5</td>
<td>79</td>
</tr>
<tr>
<td>2.</td>
<td>WA</td>
<td>31</td>
<td>21.1</td>
<td>1</td>
<td>0</td>
<td>3rd degree obstetric injury 6 mths before, POPQ IIp, FI</td>
<td>4, 5</td>
<td>75</td>
</tr>
<tr>
<td>3.</td>
<td>BH</td>
<td>49</td>
<td>34.0</td>
<td>3</td>
<td>0</td>
<td>SUI, FI</td>
<td>1, 4, 5</td>
<td>73</td>
</tr>
<tr>
<td>4.</td>
<td>BP</td>
<td>38</td>
<td>25.8</td>
<td>1</td>
<td>1</td>
<td>SUI, FI</td>
<td>1, 4, 5</td>
<td>71</td>
</tr>
<tr>
<td>5.</td>
<td>TL</td>
<td>65</td>
<td>32.0</td>
<td>3</td>
<td>0</td>
<td>SUI, POPQ IIp, FI</td>
<td>1, 4, 5</td>
<td>71</td>
</tr>
<tr>
<td>6.</td>
<td>ZU</td>
<td>67</td>
<td>38.0</td>
<td>1 (forceps)</td>
<td>2</td>
<td>SUI, FI</td>
<td>1, 4, 5</td>
<td>68</td>
</tr>
<tr>
<td>7.</td>
<td>MS</td>
<td>66</td>
<td>25.0</td>
<td>2</td>
<td>0</td>
<td>POPQ IIIaIIp IIIc, SUI, FI</td>
<td>1, 4, 5, 6</td>
<td>68</td>
</tr>
<tr>
<td>8.</td>
<td>AN</td>
<td>50</td>
<td>23.8</td>
<td>2</td>
<td>0</td>
<td>SUI, FI</td>
<td>1, 4, 5</td>
<td>63</td>
</tr>
<tr>
<td>9.</td>
<td>RS</td>
<td>26</td>
<td>23.3</td>
<td>1</td>
<td>0</td>
<td>3rd degree obstetric injury 7 mths before, POPQ IIp, FI</td>
<td>4, 5</td>
<td>51</td>
</tr>
<tr>
<td>10.</td>
<td>ZJ</td>
<td>76</td>
<td>27.0</td>
<td>2 (forceps)</td>
<td>0</td>
<td>SUI, FI</td>
<td>1, 4, 5</td>
<td>40</td>
</tr>
<tr>
<td>11.</td>
<td>BW</td>
<td>56</td>
<td>26.7</td>
<td>3</td>
<td>0</td>
<td>POPQ IVc, SUI, FI</td>
<td>1, 2, 3, 4, 5</td>
<td>28</td>
</tr>
<tr>
<td>12.</td>
<td>KS</td>
<td>74</td>
<td>24.2</td>
<td>3</td>
<td>0</td>
<td>POPQ IVc, SUI, FI</td>
<td>1, 2, 3, 4, 5</td>
<td>33</td>
</tr>
</tbody>
</table>
Post-operation, all patients were on a 5-day liquid diet with stool softeners throughout the postoperative period.

RESULTS
Final analysis of 10 women was performed (1 died in car accident, 1 lost in follow-up). Characteristics of these patients are shown in Table 2. Wexner Score pre-/postsurgery was compared using Statistica v. 12.0 software (StatSoft, Poland) (significance: \( p < 0.05 \)). Wilcoxon signed-rank test was also applied. The patients were not completely cured from FI but were significantly better (\( p = 0.011 \)) (Fig. 4). Circular secure suture around EAS on endoanal ultrasound scan presents (Fig. 5).

DISCUSSION
Fecal incontinence, although less common than POP and SUI, is a very distressing condition also associated with substantial adverse affects the quality of life. The concomitant FI occurrence has been demonstrated in 21% of all patients with UI and/or pelvic organ prolapse [7]. Overall, Jelovsek et al. [8] report that the odds of finding both FI and UI in their cohort of 302 urogynecology patients was 6.3. In a cross-sectional survey of 174 patients with pelvic floor disorders, Bezerra et al. [9] found that patients affected by both FI and UI had significantly worse QoL scores than those with either condition alone. Combined FI and UI is also known to negatively impact patient QoL. The relationship between these three pelvic floor disorders is poorly understood and little investigated. The pivotal clinical questions whether these symptoms shared the common pathological process, risk factors, or often co-exist simply by chance is still unanswered. Therefore the complex

![Figure 4. Wexner Score pre-/post-surgery](image)

![Table 2. Patient demographics — statistics](image)

![Figure 5. Endoanal ultrasound post-surgery. Arrows indicate the circular suture](image)
management of patients with such multiple pelvic floor disorders is always challenging and should be performed only in high-volume urogynecological departments.

According to our best knowledge, there are no clinical guidelines on complex surgery in patients affected by FI coexisting with UI and/or pelvic organ prolapse. Therefore we consider our study as preliminary. We decided to check the efficacy of modified by additional circular suture sphincteroplasty hoping that such suture allows proper tension-free healing of disrupted anal sphincter and will secure durability of repair as well. Numerous long-term studies have shown that the clinical efficacy of classical sphincteroplasty markedly decreases over time from 60% to even 0% [10–18]. We introduced an original additional new element to the classical overlapping sphincteroplasty namely circular secure suture around the EAS. By adding this suture we hope to increase the passive tone of the sphincter and actively secure proper tension-free healing of the repaired sphincter muscles.

In a recent Cochrane Review, Omar and Alexander [19] identified 6 trials for medications that enhance the anal sphincter tone (phenylephrine gel or sodium valproate) in patients with structurally intact anal sphincter. More people in these trials achieved full continence or improved incontinence symptoms, hence, EAS tone may help in fecal continence. The problem that arises is the adverse effects of these drugs when administered. These include localized dermatitis, burning sensation or headaches.

Many studies on sphincteroplasty have concluded that advanced age at the time of the surgery was a risk factor for long-term failure [10, 11, 15], but a recent systematic review did not find any consistent factors, including age, that were predictive for failure [17]. In addition, a recent large retrospective review of 321 women did not show any significant difference in long-term severity of FI, quality of life, or postoperative satisfaction between younger versus older women [20].

The problem of fecal incontinence coexisting with other pelvic floor dysfunction shows the need for physicians to cross disciplines or to create centres where urologists, gynecologists and colorectal surgeons can interact to manage complex patients [21].

CONCLUSIONS
Circular secure suture around EAS in FI patients may help to improve anal sphincters function after classical overlapping sphincteroplasty however further studies are needed.

REFERENCES