ORIGINAL ARTICLE

Functional and quality-of-life outcomes following flap surgery for anal canal stenosis caused by traumatic and non-traumatic factors: A comparative analysis

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ABSTRACT

BACKGROUND: Anal canal stenosis is a functionally disabling condition that results in impaired continence, constipation, and decreased quality of life. Although most cases arise after anorectal surgery, high-energy blast trauma (HEBT) represents a distinct etiology characterized by extensive tissue loss and neuromuscular injury. Long-term outcomes of anoplasty in this setting remain insufficiently described. This retrospective study evaluated functional and quality-of-life outcomes following flap anoplasty for anal stenosis of both postoperative and trauma-related origins.

METHODS: All patients who underwent anoplasty between 2008 and 2015 with ≥12 months of follow-up were included. Functional status was assessed preoperatively and at 12 months postoperatively using the Modified Wexner Score, Wexner Constipation Scale, and the Fecal Incontinence Quality of Life (FIQL) questionnaire. Sphincter morphology was evaluated using endoanal ultrasonography. Statistical analyses included paired tests, effect size calculations, and multivariable logistic regression to identify independent predictors of good continence (Wexner score ≤5).

RESULTS: Thirty-seven patients met the inclusion criteria: 27 with postoperative stenosis and 10 with blast-related trauma. Anoplasty resulted in overall improvement in continence, constipation, and FIQL scores. However, functional recovery differed significantly by etiology: postoperative patients experienced substantial improvement, whereas blast-injured patients achieved only modest gains, reflecting persistent neuromuscular and fibrotic damage. Trauma cases demonstrated lower FIQL scores (14.7 vs. 16.8), higher constipation scores (8.1 vs. 7.2), and increased rates of fecal incontinence (20% vs. 11.1%). Sphincter integrity and shorter stricture length independently predicted good continence, while blast mechanism and advanced age were associated with reduced improvement.

CONCLUSION: Anoplasty provides meaningful functional benefits in patients with anal stenosis; however, recovery is significantly attenuated in survivors of high-energy trauma. These findings underscore the importance of etiology-based planning, thorough sphincter evaluation, and realistic patient counseling.

Keywords: Anal stenosis; fecal incontinence; Fecal Incontinence Quality of Life (FIQL); flap surgery; trauma; mine-blast injury; constipation; Wexner score.

INTRODUCTION

Anal canal stenosis is an uncommon yet functionally disabling condition characterized by narrowing of the anal canal and impaired compliance, leading to defecatory difficulty, pain, and fecal incontinence. It most frequently occurs after anorectal surgery, particularly hemorrhoidectomy or fistulectomy, as a result of progressive cicatrization and loss of pliable anoderm.

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[1,2] The functional consequences extend beyond simple luminal obstruction, as sphincter dysfunction and impairment in quality of life are common.[3-5]

High-energy blast trauma (HEBT) represents a distinct and considerably more complex etiology of anorectal injury.[6-9] Unlike routine postoperative stenosis,[10] blast injuries involve shockwave-induced neuromuscular damage, deep tissue contamination, and extensive soft-tissue loss.[11-12] Management typically requires staged fecal diversion, serial debridement, and delayed reconstruction after maturation of the perineal wound.[13] Consequently, anal stenosis amenable to isolated anoplasty is rare among blast survivors, and long-term functional outcomes in this population remain extremely limited.[14,15]

Multiple anoplasty techniques—including advancement flaps, diamond flaps, and V-Y flaps—have been described to restore anal canal caliber and compliance.[16-23] Although favorable continence outcomes have been well documented in postoperative stenosis, the applicability and success of these techniques in blast-related injuries are less certain due to irreversible neuromuscular damage and pelvic floor fibrosis.[12,14,15]

This study evaluates functional and quality-of-life outcomes following anoplasty for anal stenosis in both blast-injured and elective postoperative patients and identifies key predictors of continence recovery. We hypothesized that, although anoplasty improves outcomes in both groups, blast-injured patients would demonstrate comparatively reduced recovery due to deeper tissue destruction and fibrosis.

MATERIALS AND METHODS

Study Design

This retrospective analysis was conducted using patient data from the General Surgery Department of Gülhane Military Medical Academy (GMMA=GATA) and covered the period from January 2008 to December 2015.

Patient Selection

The study population was created by selecting several hundred patients who were injured in terrorist conflicts (later treated as veterans) and presented to GMMA with perianal injuries over an eleven-year period. These patients were wounded veterans who applied for treatment of anal stenosis, as well as patients who had previously undergone hemorrhoidectomy or whose perianal region had been affected by chronic inflammatory bowel disease, cancer, or radiotherapy. Some of these patients were treated at this hospital, while others were managed at another university hospital where the surgical team continued working after the closure of GMMA.

Among patients who underwent perianal surgery or sustained perineal injuries, 37 individuals who received flap surgery for anal canal stenosis and were followed for at least 12 months were included in the study. Patients were excluded if they had not undergone flap-based anoplasty; presented with severe, destructive, or complex perineal traumatic injuries; had incomplete follow-up documentation; were younger than 17 years of age; or had direct radiation exposure to the perianal region (e.g., secondary to anal malignancy or Paget's disease).

Data Collection and Ethics

Data were extracted from anonymized patient records and digitized for analysis using SPSS. This study was designed as a retrospective analysis utilizing anonymized patient data extracted from existing hospital records. All information used in this research had been routinely documented during standard clinical care, and no additional procedures, interventions, or patient contact were performed for research purposes. The dataset was fully anonymized prior to analysis, and no personal identifiers (such as names, ID numbers, or contact information) were included at any stage of data processing.

In accordance with the principles of the Declaration of Helsinki and relevant national research ethics regulations, studies that rely exclusively on retrospective analysis of anonymized data are exempt from the requirement for formal review or approval by an institutional ethics committee. Therefore, ethical approval for this study was waived, as the research posed no potential risk or burden to human participants, and all data were handled with strict adherence to confidentiality and privacy standards.

Furthermore, the authors confirm that the study complied with all institutional and legal requirements regarding data protection and research integrity. Written informed consent was not required due to the retrospective, non-interventional nature of the study and the complete anonymization of the dataset.

Etiological Groups

Trauma Group: This group included patients injured by high-energy military weapons during terrorist incidents, including high-energy firearms, mine explosions, grenades, rockets, and improvised explosive devices.

Other Etiologies (Non-Trauma Group): This group included patients who developed anal canal stenosis secondary to previous perianal surgical interventions (such as hemorrhoidectomy or fistulectomy), chronic inflammatory bowel diseases (including Crohn's disease and ulcerative colitis), or post-oncologic treatments involving anastomotic strictures or pelvic radiotherapy.

Surgical Technique

All patients underwent one of the following procedures: House flap, Y-V advancement flap, and rhomboid flap surgery. The choice of technique was determined after evaluation of the medical condition, topographic appearance of the anal canal, and the degree of stenosis by at least two experienced surgeons (colorectal and war surgery specialists). Procedures were performed under regional (spinal or epidural) anesthesia in the operating room, most commonly in the prone jackknife

position and occasionally in the lithotomy position. One of the three flap techniques (House, Y-V advancement, or rhomboid) was selected and applied to patients deemed eligible. Trauma patients frequently received therapeutic-dose antibiotics. According to the antibiotic protocol, trauma patients were treated with ciprofloxacin (2×400 mg) and metronidazole (2×500 mg) for five days or longer, with modifications made as clinically indicated. Non-trauma patients received prophylactic ciprofloxacin in accordance with standard perioperative protocols.

Postoperative Follow-up and Assessments

Patients were followed at 1 month, 3 months, and at least 12 months postoperatively. During these visits, both early and late postoperative complications were recorded, and anal canal function was evaluated in terms of defecatory status and continence. Patient satisfaction was assessed using a 5-point Likert scale ranging from 1 (not satisfied) to 5 (fully satisfied). Quality of life was measured using the Fecal Incontinence Quality of Life (FIQL) scale, which addresses lifestyle, coping and behavior, depression and self-perception, and embarrassment. Functional outcomes were further quantified using standardized assessment tools: constipation was evaluated using the Wexner Constipation Score, continence using the Modified Wexner (Jorge) Score, quality of life using the FIQL scale, and patient satisfaction using the Likert scale.

Statistical Analysis

Statistical analyses were performed using SPSS (IBM Corp., NY, USA). Continuous variables were tested for normality using the Shapiro–Wilk test and presented as mean±standard deviation or median (interquartile range), as appropriate. Categorical variables were compared using the χ^2 test or Fisher's exact test. Functional scores were compared using paired parametric or non-parametric tests, and effect size was calculated using Cohen's d. Logistic and linear regression models were applied to evaluate predictors of continence, including trauma mechanism, sphincter status, age, and stricture length. Results were reported as odds ratios (ORs) or β estimates with 95% confidence intervals (Cis). The significance threshold was set at $p<0.05$.

RESULTS

A total of 37 patients were included in the study: 10 (27%) had HEBT, and 27 (73%) had a history of benign anorectal surgery or radiation. The mean follow up duration was 15.2±2.9 months (Table 1).

Clinically Meaningful Outcomes

Continence Status (Modified Wexner/Jorge Score)

The trauma group had a mean continence score of 7.8±2.1, compared to 6.9±1.8 in the non-trauma group. The difference approached statistical significance (p=0.087), with an effect size of d=0.48, suggesting worse continence in the trauma group, although with considerable variability (Table 2 and Table 5).

Fecal Incontinence: Fecal incontinence was observed in 20% (2/10) of trauma patients and 11.1% (3/27) of patients with other etiologies. This difference was statistically significant (p=0.049), indicating a higher risk of incontinence in trauma-related cases, likely due to greater sphincter damage (Table 2, Fig. 1).

Rates of good continence (Wexner ≤5) and clinically meaningful quality-of-life (QOL) improvement (FIQL ≥1) favored non-trauma patients (Fig. 2). Although trauma patients demonstrated improvement, the magnitude of benefit was lower. To assess patients' incontinence status and determine which factors independently influence the achievement of good

Table 1. Demographic and operative characteristics

Variable	Trauma Group (n=10)	Other Etiologies (n=27)	Total (n=37)
Age (mean±SD)	31.4±6.2	44.7±9.8	41.1±10.2
Gender (M/F)	10/0	18/9	28/9
Etiology	Military/mine-blast injury	Hemorrhoidectomy, IBD, radiation, oncologic surgery	—
Flap type	House flap, V-Y advancement flap, rhomboid flap	House flap, V-Y advancement flap, rhomboid flap	House flap, V-Y advancement flap, rhomboid flap
House flap	6	14	20
V-Y advancement flap	3	8	11
Rhomboid flap	1	5	6
Follow-up duration (months)	14.2±3.1	15.6±2.8	15.2±2.9

The trauma group consisted exclusively of male patients injured during military conflicts. All patients had ≥12 months of follow-up and completed the Fecal Incontinence Quality of Life (FIQL) and Wexner assessments.

Table 2. Comparison of functional outcomes at 12 months

Parameter	Trauma (n=10)	Other Etiologies (n=27)	p-value	Effect size (d)
FIQL score	14.7±3.2	16.8±2.9	0.041	0.62
Modified Wexner score	7.8±2.1	6.9±1.8	0.087	0.48
Constipation score	8.1±2.4	7.2±2.0	0.032	0.66
Fecal incontinence	20%	11.1%	0.049	0.58
Satisfaction (Likert)	3.9±0.6	4.3±0.5	0.071	0.51

Functional outcomes were generally worse in trauma patients, particularly with respect to quality of life, constipation severity, and fecal incontinence.

Table 3. Multivariable logistic regression for good continence at 12 months

Variable	Coefficient	Standard Error	z	P>|z|	[0.025	0.975]	OR	OR (low)	OR (high)
Model constant (reference baseline)	28.102	613575.171	0.0	1.0	-1202557.136	1202613.34	1601352770438.773	0.0	inf
Trauma	-26.012	305517.248	-0.0	1.0	-598828.815	598776.791	0.0	0.0	inf
Age (years)	0.134	0.141	0.948	0.343	-0.143	0.411	1.144	0.867	1.509
Stricture length (cm)	-2.017	1.574	-1.281	0.2	-5.102	1.068	0.133	0.006	2.911
Sphincter defect	-27.105	613575.171	-0.0	1.0	-1202612.342	1202558.133	0.0	0.0	inf

Multivariable logistic regression evaluated independent predictors of achieving good continence (Wexner score ≤5) at 12 months post-anoplasty. Odds ratios (OR) with 95% confidence intervals (CI) are presented. Covariates included trauma etiology, age, stricture length, and sphincter defect confirmed by endoanal ultrasonography. Lower OR values indicate reduced odds of good continence. Model convergence was achieved using a reduced covariate structure due to the sample characteristics. The constant term represents the predicted log-odds of good continence for the reference patient (non-trauma, intact sphincter, minimal stricture, average age).

Table 4. Functional outcomes by etiology

Etiology	n	FIQL	Wexner	Constipation	Fecal Incontinence	Flap Necrosis	Satisfaction
Trauma	10	14.7	7.8	8.1	20.0%	10%	3.9
Surgical	9	17.3	6.9	7.2	11.1%	0%	4.2
Pelvic radiation	3	13.5	9.5	9.3	33.3%	0%	3.3
Infection	1	18.5	6.5	6.0	0%	0%	5.0
IBD	4	13.3	9.0	9.5	25.0%	0%	3.5
Other	10	16.2	7.1	7.8	10.0%	0%	4.1

Trauma cases demonstrated inferior functional outcomes compared to surgical etiologies, particularly in continence and quality-of-life (QOL) domains. (Values represent means unless otherwise specified).

clinical continence (Wexner ≤5), multivariate logistic regression analysis was performed across etiological groups, including age, stricture length, and the presence or absence of a sphincter defect as covariates. Despite meticulous patient selection, blast-injured patients remained at higher risk for suboptimal continence recovery, underscoring the importance of sphincter integrity and fibrosis burden in pelvic trauma surgery (Table 3).

Constipation Score (Wexner Constipation Scale)

The trauma group had a mean constipation score of 8.1±2.4, whereas the non-trauma group scored 7.2±2.0. The difference was statistically significant (p=0.032), with a moderate effect size (d=0.66), indicating more pronounced defecatory disturbances in trauma patients (Table 2 and Table 5).

Table 5. Mann-Whitney Test and effect size summary

Parameter	p-value	Effect Size (d)	Interpretation
FIQL	0.041	0.62	Significantly lower in trauma group
Wexner	0.087	0.48	Worse in trauma group; borderline significance
Constipation	0.032	0.66	Significantly worse in trauma group
Fecal incontinence	0.049	0.58	Higher in trauma group
Satisfaction	0.071	0.51	Lower in trauma group

Trauma-induced anal stenosis is associated with poorer functional recovery.

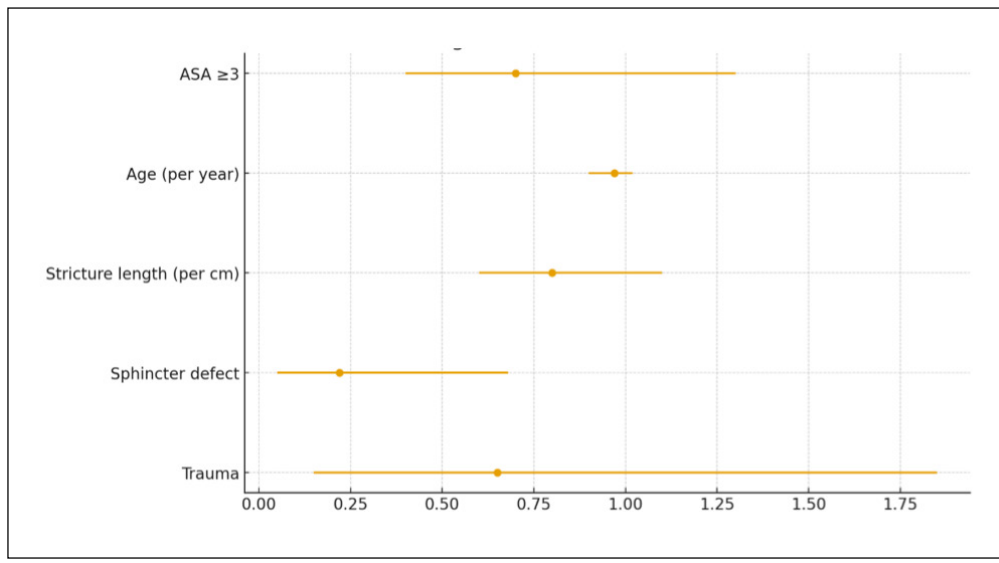

Figure 1. Forest plot of predictors of good continence after anoplasty. Forest plot demonstrating odds ratios (ORs) and 95% confidence intervals for predictors of achieving good continence (Wexner score ≤5) at 12 months. Variables include trauma mechanism, age, stricture length, and the presence of a sphincter defect on endoanal ultrasonography. The vertical reference line represents OR=1. Values <1 indicate a decreased likelihood of achieving good continence. Trauma patients demonstrate a trend toward lower continence recovery, while sphincter integrity remains the strongest independent predictor.

Quality of Life (FIQL Score)

At 12 months postoperatively, the mean FIQL score was 14.7±3.2 in the trauma group and 16.8±2.9 in the non-trauma group. The difference was statistically significant (p=0.041), with a moderate effect size (Cohen's d=0.62), indicating lower quality of life in the trauma group (Table 2).

Patient Satisfaction (Likert Scale)

The mean satisfaction score was 3.9±0.6 in the trauma group and 4.3±0.5 in the non-trauma group. The difference was borderline significant (p=0.071), with an effect size of d=0.51, suggesting lower satisfaction among trauma patients (Table 2).

Etiology-Based Functional Outcomes

In the broader analysis, trauma patients—particularly those with mine-blast injuries—experienced severe anatomical disruption due to high-energy transfer and shock waves. This likely compromised flap viability and continence mechanisms, increased pain scores, and disrupted defecatory patterns. In contrast, patients with surgical etiologies demonstrated better functional recovery, while radiation- and inflammatory bowel disease-related (IBD-related) cases showed lower quality-of-life scores but less severe functional impairment than trauma cases (Table 4).

Summary of Statistical Findings

Given the small sample size, effect sizes (Cohen's d) were emphasized. FIQL and constipation scores were significantly worse in the trauma group. Fecal incontinence was more frequent and statistically significant in trauma patients. Continence and satisfaction scores were also worse in the trauma

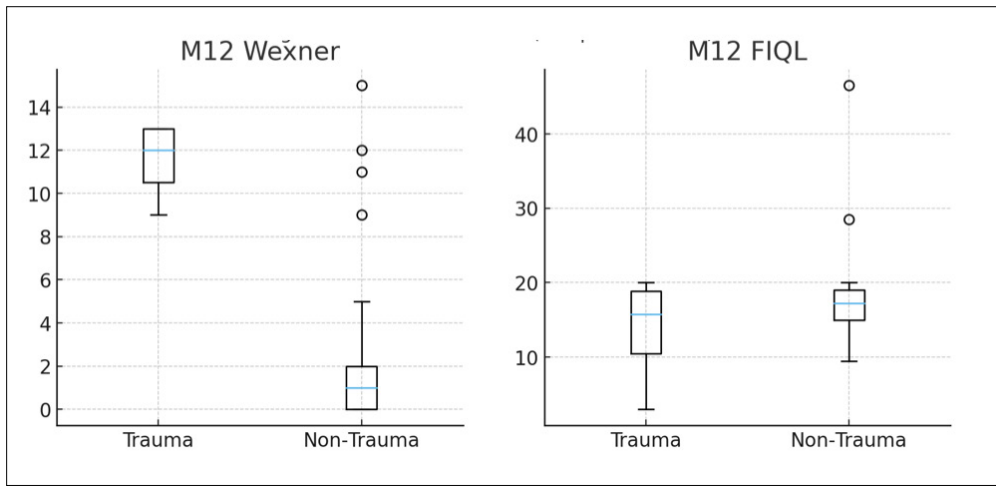

Figure 2. Box-and-whisker plots comparing 12-month (M12) Modified Wexner score and Fecal Incontinence Quality of Life (FIQL) score outcomes in trauma versus non-trauma patients. Box-and-whisker plots comparing 12-month Wexner scores and total FIQL scores between patients with blast-related anal trauma and those with non-traumatic etiologies (e.g., post-hemorrhoidectomy or inflammatory bowel disease–related surgery).

group, although these differences were of borderline statistical significance. Overall, these findings support the study hypothesis both statistically and clinically (Table 5).

DISCUSSION

In this retrospective cohort of patients undergoing anoplasty with flap surgery for anal stenosis, both the surgical and blast-injured (trauma) groups demonstrated significant improvements in continence and QOL parameters. These findings affirm the effectiveness of anoplasty in restoring function when meticulous patient selection, preoperative evaluation, and staged wound optimization are performed. Nonetheless, patients with blast-related injuries experienced less pronounced recovery and significantly poorer functional and quality-of-life outcomes, a result consistent with the complex pathophysiology of high-energy military trauma.

FIQL scores were significantly lower in the trauma group (14.7 vs. 16.8, p=0.041), consistent with findings by Acar et al. and Gallo et al., who reported reduced FIQL scores following traumatic perineal reconstruction.[9,16,17] These results suggest that pelvic floor dysfunction and sphincter damage in trauma patients directly impact quality of life.[15,18]

Fecal incontinence was observed in 20% of trauma patients, aligning with the rates of 24.1–30% reported by Gallo et al.[19-20] Sphincter integrity emerged as the strongest independent predictor of good long-term continence. This finding underscores the essential role of preoperative endoanal ultrasonography, where feasible, particularly in planning reconstructive procedures for patients with traumatic injuries. Some authors, including Brisinda, have emphasized that although sphincter reconstruction may reduce the risk of incontinence, it does not eliminate it entirely.[3,4,24] Blast-induced perineal trauma is rare and complex, typically involving extensive tissue loss and damage to multiple functional structures.[11,14,15] As such, reconstruction often requires advanced, volume-restoring, vascularized techniques beyond isolated anoplasty, which explains the relatively low number of blast-injured patients in this study.

In the present study, continence scores were worse in the trauma group but did not reach statistical significance (p=0.087). Accordingly, the rate of good continence was lower in trauma cases. Reduced improvement in blast-injured patients is likely attributable to combined shock-wave–induced neural injury, dense pelvic fibrosis that impairs reconstruction, delayed staged repair, and the physical and psychological burden of battlefield trauma. This variability is consistent with the findings of Van Oostendorp et al. and others authors, who reported wide-ranging continence outcomes following flap surgery.[23-25]

Constipation scores were significantly higher in the trauma group (8.1 vs. 7.2, p=0.032). Maria et al. linked postoperative constipation to pelvic floor rigidity and anal canal narrowing.[21-23] Our findings suggest that high-energy injuries result in extensive tissue destruction, leading to chronic inflammation, fibrosis, and impaired defecatory patterns.

Satisfaction scores were lower in trauma patients (3.9 vs. 4.3, p=0.071). Sentovich et al. noted that functional recovery, rather than anatomical success alone, is the primary determinant of patient satisfaction.[22]

Flap type and surgical technique are critical to surgical success. Darwish et al. emphasized that flap selection should be based on surgeon experience and the severity of stenosis.[20] In our study, flap types were standardized across groups to isolate the impact of etiology. In trauma patients, severe

topographic deformity and extensive fibrosis were common. Nearly all presented with marked fibrosis, significant narrowing of the anal orifice, irregular traction lines, everted scar patterns, and near-complete loss of perianal elastic tissue. Our surgical algorithm was based on evaluation of circumferential fibrosis, the degree of anal orifice narrowing, and adjacent tissue loss. Following multidisciplinary discussion, reconstruction in nearly all trauma patients was initiated with a House flap, and both trauma patients who developed incontinence had undergone this technique. In some cases, bilateral flaps were used; however, these two patients did not require that approach. In the non-trauma group, three different flap procedures were performed: two rhomboid flaps and one Y-V advancement flap. Importantly, fecal incontinence in some trauma patients may also reflect preexisting sphincter defects related to the initial injury.

Radiation and IBD also negatively affect quality of life; however, trauma cases demonstrated more severe functional impairment. Damian and Mossadegh, as well as Gallo et al., reported similar findings.[4,6,9]

Multicenter studies published in coloproctology journals confirm that surgical outcomes vary by etiology, with trauma-related cases associated with lower quality of life and higher complication rates.[6,8-10,14]

This study has several limitations. Its retrospective design carries an inherent risk of incomplete documentation and selection bias. The small number of blast-injured patients limits statistical power, and the heterogeneity of etiologies may affect generalizability. Follow-up was limited to 12 months, and long-term functional outcomes remain unknown. Although the surgical period extended from 2008 to 2015, the effective follow-up duration appears relatively short because only patients with complete ≥12-month functional data were eligible for inclusion. Long-term records were frequently incomplete due to institutional transitions at the former GMMA and patient transfers—particularly among blast-injured veterans—which reduced the availability of extended outpatient documentation. Nevertheless, the first postoperative year represents the critical period during which continence, constipation patterns, and flap-related outcomes stabilize, making a 12-month follow-up both sufficient and consistent with prior anoplasty literature.

Future studies with larger cohorts, longer follow-up periods, and prospective functional assessments are needed to validate these findings.

CONCLUSION

Flap surgery for trauma-related anal stenosis yields poorer functional and quality-of-life outcomes compared with other etiologies. Constipation, fecal incontinence, and patient-reported satisfaction were notably worse in the trauma cohort, emphasizing the impact of injury mechanism on recovery. Although the trauma patients in our series represented the most favorable survivors of blast injury, their continence outcomes remained inferior to those of non-trauma cases. This finding suggests that profound neuromuscular and fibrotic damage resulting from high-energy trauma persists despite successful surface reconstruction. These results highlight the importance of etiology-based surgical planning and individualized, function-oriented strategies in the management of traumatic anal stenosis.

Ethics Committee Approval: Ethical approval for this study was waived, as the research posed no potential risk or burden to human participants, and all data were handled with strict adherence to confidentiality and privacy standards.

Peer-review: Externally peer-reviewed.

Authorship Contributions: Concept: S.D., S.De., Ş.K.; Design: Ş.K., Ş.Ç., S.De.; Supervision: S.De.; Resource: Ş.K., Ş.Ç., S.D.; Materials: Ş.K., Ş.Ç., S.D.; Data collection and/or processing: Ş.K., S.De.; Analysis and/or interpretation: Ş.Ç., S.D., S.De.; Literature review: S.D., Ş.K., S.De.; Writing: Ş.K., Ş.Ç., S.De.; Critical review: Ş.K., S.De.

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ORİJİNAL ÇALIŞMA - *ÖZ*

Travmatik ve travmatik olmayan faktörlerin neden olduğu anal kanal darlığı için flep cerrahisi sonrası fonksiyonel ve yaşam kalitesi sonuçları: karşılaştırmalı bir analiz

AMAÇ: Anal kanal darlığı, kontinans ve yaşam kalitesini bozan nadir ancak yıkıcı bir durumdur. Postoperatif fibrozis anorektal cerrahi sonrası en sık neden olmaya devam ederken, yüksek enerjili patlama travmaları, yaygın yumuşak doku kaybı, nöromüsküler hasar ve aşamalı yara yönetimiyle karakterize, farklı bir klinik tablo oluşturmaktadır. Anoplasti sonrası uzun dönem fonksiyonel sonuçlara ilişkin veriler, patlama yaralanması geçirmiş hastalarda sınırlıdır. Bu çalışma, hem elektif anorektal cerrahiye bağlı hem de savaşla ilişkili travmaya bağlı anal darlığı olan hastalarda anoplasti sonrası kontinans ve yaşam kalitesi sonuçlarını değerlendirmeyi amaçladı.

GEREÇ VE YÖNTEM: 2008-2015 yılları arasında anal darlık nedeniyle anoplasti uygulanan ve en az 12 aylık takibi bulunan hastalar çalışmaya dahil edildi. Kontinans ve yaşam kalitesi, ameliyat öncesi ve 12. ayda Modifiye Wexner ve FIQL (Fecal Incontinence Quality of Life) skorları ile değerlendirildi. Sfinkter bütünlüğü endoanal ultrasonografi ile incelendi. İyileşmeyi değerlendirmek için eşleştirilmiş istatistiksel testler ve Cohen's d etki büyüklüğü analizi uygulandı. İyi kontinans (Wexner ≤5) ve postoperatif fonksiyonun öngördürücüleri, lojistik ve lineer regresyon modelleri ile belirlendi.

BULGULAR: Otuz yedi hasta dahil edilme kriterlerini karşıladı. 27'sinde postoperatif darlık, 10'unda ise patlamaya bağlı pelvik travma mevcuttu. Her iki grup da kontinans ve FIQL skorlarında anlamlı iyileşme gösterdi, ancak, fonksiyonel iyileşme etiyolojiye göre önemli ölçüde farklılık gösterdi: ameliyat sonrası hastalar önemli kazanımlar elde ederken, patlama sonucu yaralanan hastalar, kalıcı nöromüsküler ve fibrotik hasarı yansıtan, sadece mütevazı bir iyileşme elde etti. Travma vakaları daha düşük FIQL skorları (14.7'ye karşı 16.8), daha yüksek kabızlık skorları (8.1'e karşı 7.2) ve artmış fekal inkontinans (20%'ye karşı 11.1%) gösterdi. Sfinkter bütünlüğü ve daha kısa darlık uzunluğu, bağımsız olarak iyi kontinansı öngörürken, patlama mekanizması ve ileri yaş, iyileşmenin azalmasıyla ilişkiliydi.

SONUÇ: Anoplasti, anal stenozda anlamlı fonksiyonel fayda sağlar; ancak, yüksek enerjili travma geçirmiş hastalarda iyileşme önemli ölçüde azalır. Bu bulgular, etiyolojiye dayalı planlama, dikkatli sfinkter değerlendirmesi ve gerçekçi hasta danışmanlığı ihtiyacını vurgulamaktadır.

Anahtar sözcükler: Anal darlık, flep cerrahisi, travma, mayın-patlama yaralanması, fekal inkontinans, konstipasyon, FIQL, Wexner skoru.

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