ORIGINAL ARTICLE

Expanding minimally invasive horizons for pubic symphysis diastasis: The laparoscopic total extraperitoneal approach in orthopedic surgery (O-TEP)

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ABSTRACT

BACKGROUND: This study aims to present the preliminary clinical and functional outcomes of pubic symphysis diastasis (PSD) cases treated with plate-screw fixation using the laparoscopic total extraperitoneal approach in orthopedic surgery (O-TEP).

METHODS: This retrospective study included 13 patients who underwent O-TEP symphysis pubis plating for PSD between March 2022 and May 2025, all with a minimum follow-up period of 12 months. Data collected encompassed demographic characteristics, injury mechanisms, additional pathologies, and injury classifications (Young-Burgess and AO/OTA). Surgical details, including duration, blood loss, hospital stay, and postoperative follow-up, were recorded. Clinical and functional outcomes were assessed using postoperative VAS scores, as well as Iowa Pelvic and Majeed Pelvic scores at the final follow-up. The study also evaluated implant failure, the need for revision surgery, and surgery-related complications.

RESULTS: The mean age of the patients was 40±14.8 years (21–61). The gender distribution was 77% male and 23% female. The mean operating time was 113±36 minutes (65–175). The average blood loss was 127±67.3 ml (70–300), and the mean postoperative hospitalization period was 2.7±0.8 days (2–4). No postoperative complications, such as infection, implant failure, loss of reduction, or need for revision, were observed. Postoperative VAS scores on days 1 and 2 were 3.7±1.5 (1–6) and 2.2±1.03 (1–4), respectively. The mean follow-up period was 21.5±6.9 months (12–32), with a mean Iowa Pelvic Score of 87.1±4.7 (80–95) and a mean Majeed score of 84.9±4.01 (78–91).

CONCLUSION: Laparoscopic total extraperitoneal approach in orthopedic surgery (O-TEP) is an innovative minimally invasive technique that expands the available options for surgeons in the treatment of selected anterior pelvic ring injuries, providing clinically and radiologically satisfactory outcomes.

Keywords: Endoscopy; laparoscopy; orthopedic total extraperitoneal approach (O-TEP); pelvic ring injury; pubic symphysis diastasis.

INTRODUCTION

Pelvic ring disruptions are often associated with high-energy traumas and can be catastrophic and life-threatening.[1,2] Pubic symphysis diastasis (PSD) is the anterior component in various types of pelvic ring disruptions.[3] According to the Young-Burgess classification system, PSD can result from any mechanism, but anteroposterior compression is the most commonly observed mechanism.[4]

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Various surgical treatment options for PSD requiring surgery have been reported, including external fixator,[5] internal fixator,[6] plate osteosynthesis,[7] percutaneous screw fixation,[8] and the endobutton technique.[9] Open reduction and internal fixation of the pubic symphysis using plates and screws have been widely accepted as the standard treatment.[8,10] In plate osteosynthesis of the symphysis pubis, the Pfannenstiel approach or the medial window of the modified Stoppa approach is frequently used.[11] Although these approaches clearly expose the anterior pelvic ring and the symphysis pubis, they also bring potential risks associated with open surgical procedures, such as rectus abdominis muscle stripping, iatrogenic vascular and nerve injuries, increased bleeding, and higher infection rates.[12]

Endoscopy of the Retzius space, which also allows intervention in the symphysis pubis and anterior pelvic ring, is widely used by general surgeons in total extraperitoneal (TEP) inguinal hernia repair.[13] Recently, both cadaver studies and case reports have demonstrated the feasibility of a fully endoscopic approach to the anterior pelvic ring and full endoscopic symphysis pubis plating.[11,12,14–16]

The aim of this study is to present clinical experiences with the full endoscopic approach for the surgical treatment of PSD, including initial short-term clinical outcomes. Furthermore, this study seeks to offer preliminary insights into the technique, including its potential advantages, disadvantages, and complications.

MATERIALS AND METHODS

This retrospective study was conducted at a Level I trauma center. This study was approved by the Bakırköy Dr. Sadi Konuk Training and Research Hospital Clinical Ethics Committee (Date: 07.08.2023, Decision no: 2023-15-11). Additionally, the study was registered with ClinicalTrials.gov (Registration Number: NCT06634082).

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Study Design and Population

A total of 19 patients with pubic symphysis diastasis were scheduled for total extraperitoneal (O-TEP) endoscopic symphysis pubis plating between March 2022 and May 2025 at a single Level I trauma center. Of these, four patients with a follow-up period of less than 12 months and two patients who required conversion to open surgery due to pneumoperitoneum that developed during the procedure were excluded. Ultimately, 13 patients who successfully underwent plating via O-TEP and had a minimum follow-up period of 12 months were included in the study.

Patient Characteristics and Data Collection

All patients underwent immediate pelvic AP radiographs and CT scans following the injury. The following data were recorded for each patient: demographic information, injury mechanisms, additional pathologies, pelvic ring injury classifications (according to Young-Burgess and AO-OTA classifications), body mass index (BMI), surgical duration, blood loss, complications, reasons for conversion to open surgery, hospital stay duration, and postoperative follow-up duration.

Surgical Technique (Fig. 1, Technical video)

All procedures were performed by a senior orthopedic surgeon with at least five years of experience in pelvic and ac-

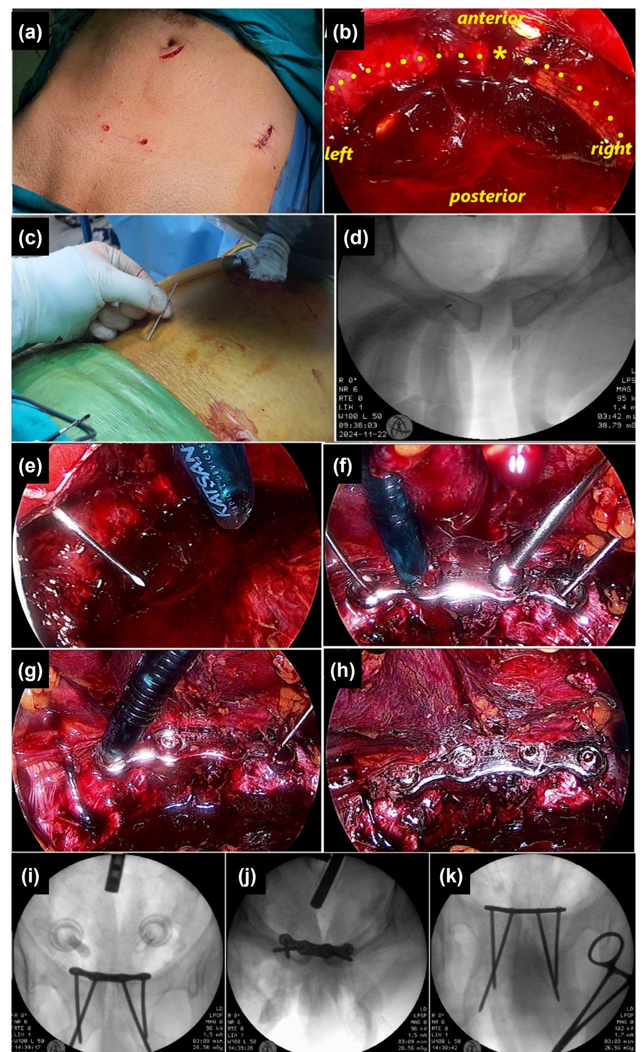

Figure 1. Surgical technique: **(a)** Imaging and instrumentation portals; **(b)** Endoscopic evaluation of the anterior pelvic ring; dotted marks indicate the right and left superior pubic rami, while * marks the symphysis pubis; **(c-d)** Determination of optimal instrumentation portal sites under fluoroscopic guidance; **(e)** Creation of instrumentation portals under direct endoscopic visualization; **(f)** Placement of the plate after reduction and temporary fixation of the plate with K-wires; **(g)** Drilling under endoscopic guidance and fixation of the plate with screws; **(h)** Endoscopic view of anterior arch plate fixation; **(i-k)** Fluoroscopic checks after the surgical procedure.

etabular fracture surgery, who had received structured training in the laparoscopic total extraperitoneal (TEP) technique through participation in laparoscopic inguinal hernia procedures performed by general surgeons. During the initial five cases, general surgeons were actively involved in the procedures. In subsequent cases, general surgeons were present in the operating room and available if needed, while the procedures were independently performed by the orthopedic surgeon.

After positioning the patient supine, the imaging portal, identical to that used by general surgeons during laparoscopic total extraperitoneal inguinal hernia repair, is established through a 2–3 cm crescent-shaped incision made 1–2 cm below the umbilicus, to the right or left of the midline (Fig. 1A). The anterior sheath of the rectus abdominis is opened slightly lateral to the linea alba, allowing passage of a 10 mm trocar. The rectus abdominis fibers are gently retracted laterally with an index finger to expose the preperitoneal space, avoiding peritoneal perforation. The preperitoneal space is dissected bluntly with an index finger and expanded with a balloon dissector, inflated to 20-25 puffs. After expansion, a 1 cm visualization portal is inserted, and CO2 is insufflated to 10-15 mmHg. Visualization is achieved with a 10 mm, 30-degree laparoscope, allowing evaluation of the Retzius space, pubic rami, and symphysis pubis (Fig. 1B).

Since the location of the instrumentation portals would affect the screw trajectory, the optimal entry site was determined under fluoroscopic guidance. For this purpose, in the pelvic inlet view where the superior and inferior pubic rami are superimposed, a 2–3 cm K-wire was axially aligned to represent the screw axis. The point where the K-wire intersected the skin surface was marked as the entry site for the portal (Fig. 1C-D). Subsequently, two instrumentation portals were created at the marked sites under direct endoscopic visualization (Fig. 1E). Hematoma and damaged soft tissues were cleared with a periosteal elevator and laparoscopic suction. If present, the corona mortis vessel was ligated with laparoscopic clips. Symphyseal reduction was achieved using an external fixator system established via external pins placed in the supraacetabular corridor or via a reduction clamp placed through parasymphyseal mini-incisions. Once confirmed, a four-hole symphyseal plate was introduced and temporarily fixed with K-wires (Fig. 1F). After fluoroscopic assessment, the plate was secured with screws using drills and screwdrivers through the laparoscopic ports (Fig. 1G). Final positioning of the plate and screws was confirmed endoscopically and fluoroscopically (Figs. 1H-K). The procedure concluded with irrigation; no drains were used.

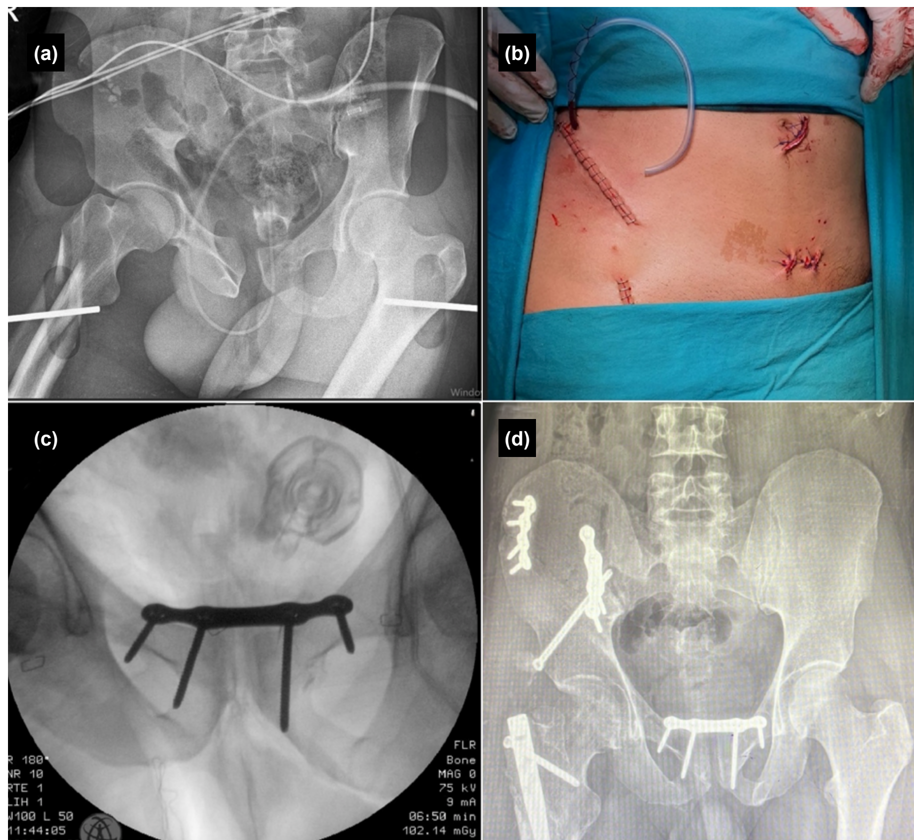

Figure 2. (a) Preoperative pelvis AP radiograph of a patient with an APC1 pelvic ring injury (Young-Burgess classification) and a C1-1AD injury (AO/OTA classification); **(b)** Incisions used during the surgery; **(c)** Fluoroscopic check after the surgical procedure; **(d)** Postoperative 22nd-month pelvis AP radiograph of the patient.

Postoperative Care Protocol

A standardized analgesic protocol was applied: IV tramadol (2 mg/kg, up to 400 mg/day) and IV paracetamol (15 mg/kg, up to 75 mg/kg/day) were given three times daily to ensure consistent pain management. Pain levels were evaluated using VAS scores on postoperative days 1 and 2. Rehabilitation began on the first postoperative day, encouraging early mobilization. Patients with isolated anterior pelvic ring injuries were allowed partial weight-bearing (up to 50% of body weight). For those with additional lower extremity or posterior ring injuries, toe-touch weight-bearing with crutches was permitted for the first 6 weeks, followed by partial weight-bearing for the next 6 weeks. Full weight-bearing and unsupported mobilization began at 3 months, as tolerated.

Postoperative Evaluation and Follow-up

Pelvic radiographs were taken postoperatively and at 1, 3, 6, and 12 months, as well as at the final check-up, to monitor healing and alignment. Clinical and functional outcomes were assessed with Iowa and Majeed Pelvic scores at the final follow-up. Additionally, implant failure, revision needs, and surgery-related complications were evaluated.

Representative Cases

Figures 2–5 illustrate representative cases treated with the O-TEP technique. For each case, preoperative and postoperative pelvic AP radiographs, surgical incision sites, and intraoperative fluoroscopic images are provided. These examples include one case from each classification subtype included in our study, demonstrating the diversity of pelvic ring injuries treated. Figure 2 presents a case classified as APC1 (Young-Burgess classification) and C1-1AD (AO/OTA classification). Figure 3 shows a case with an APC2 injury (Young-Burgess classification) and B2-3D injury (AO/OTA classification). Similarly, Figure 4 depicts another APC2 case, classified as B3-3D (AO/OTA classification). Finally, Figure 5 illustrates a more complex APC3 injury, classified as C1-2D (AO/OTA classification).

Statistical Analysis

Descriptive statistics, including mean, standard deviation, median, minimum, maximum, frequency, and ratio values, were used to summarize the data. All statistical analyses were performed using IBM SPSS 26 (Chicago, IL, USA). The results are presented to provide a clear overview of patient demographics, surgical details, and clinical outcomes, ensuring a comprehensive understanding of the findings.

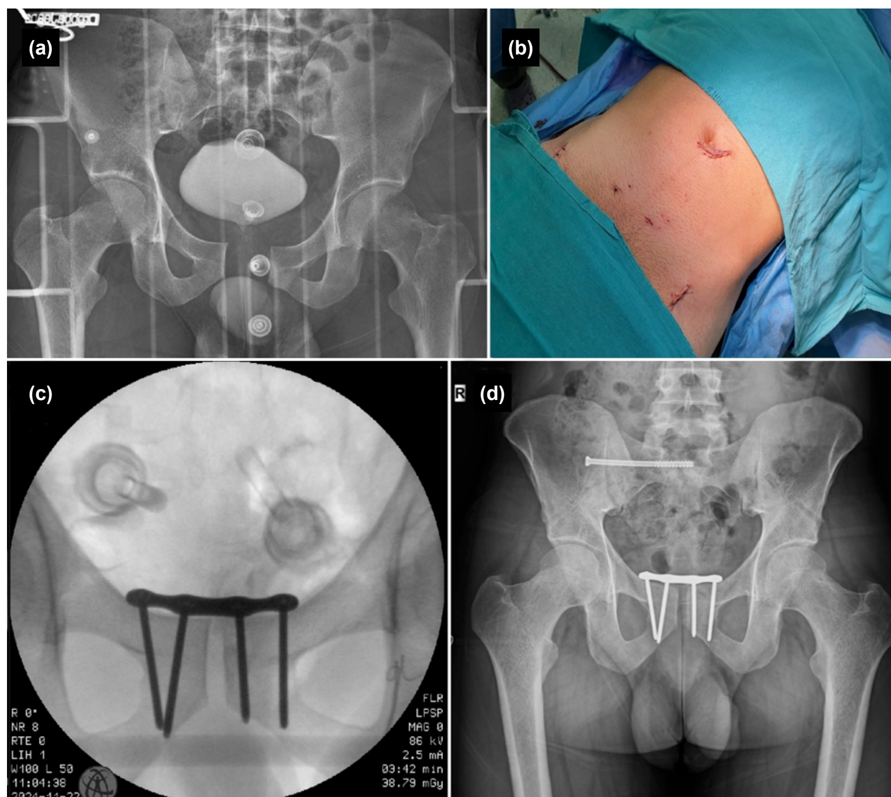

Figure 3. (a) Preoperative pelvis AP radiograph of a patient with an APC2 pelvic ring injury (Young-Burgess classification) and a B2-3D injury (AO/OTA classification); **(b)** Incisions used during the surgery; **(c)** Fluoroscopic check after the surgical procedure; **(d)** Postoperative 14th-month pelvis AP radiograph of the patient.

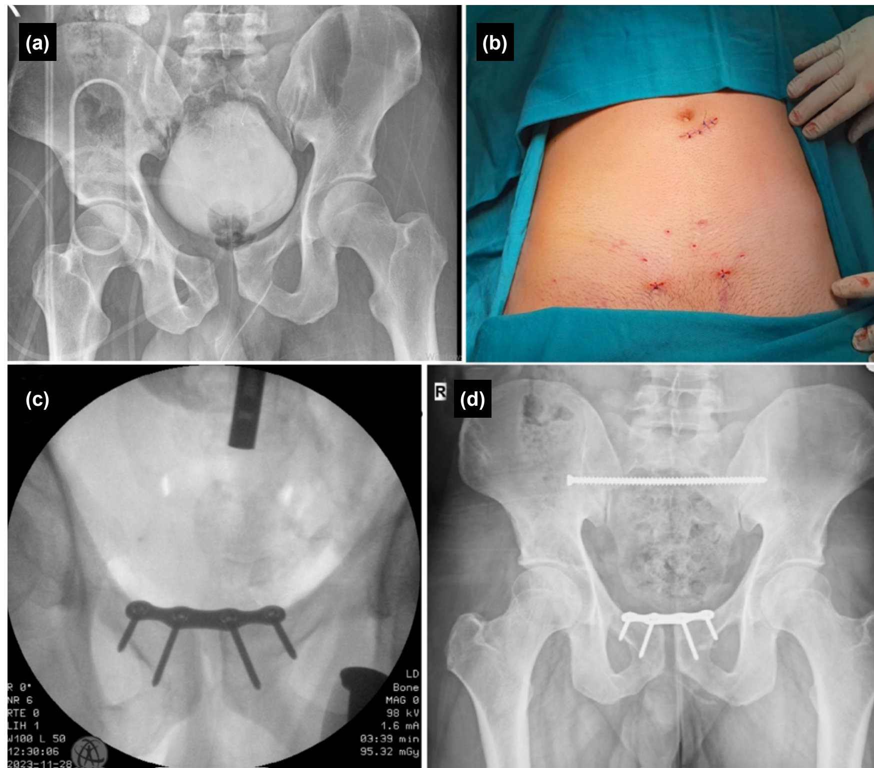

Figure 4. (a) Preoperative pelvis AP radiograph of a patient with an APC2 pelvic ring injury (Young-Burgess classification) and a B3-3D injury (AO/OTA classification); **(b)** Incisions used during the surgery; **(c)** Fluoroscopic check after the surgical procedure; **(d)** Postoperative 20th-month pelvis AP radiograph of the patient.

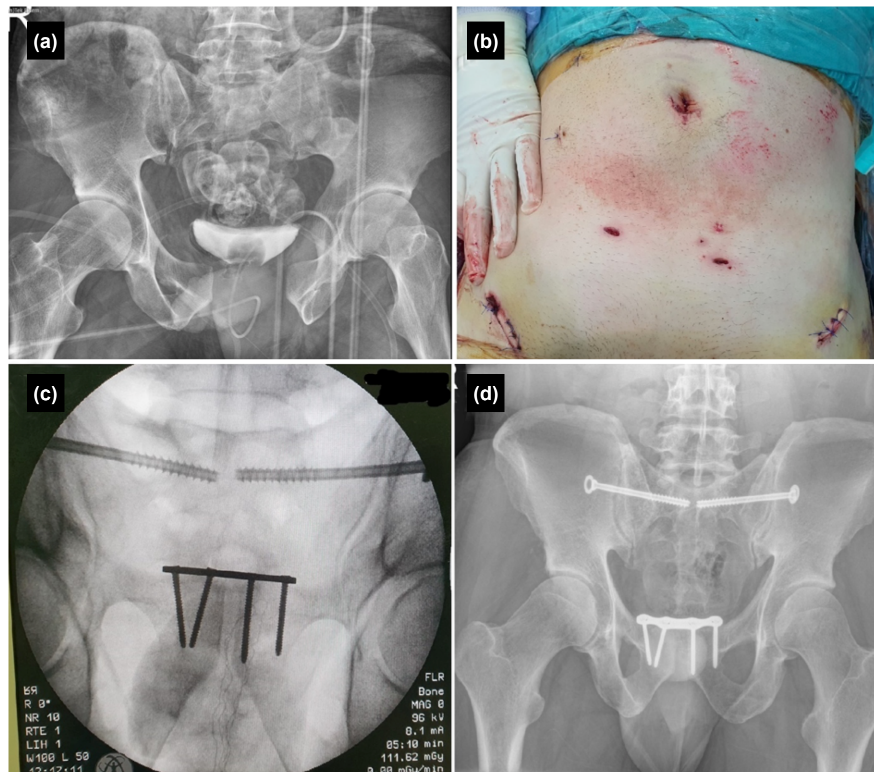

Figure 5. (a) Preoperative pelvis AP radiograph of a patient with an APC3 pelvic ring injury (Young-Burgess classification) and a C1-2D injury (AO/OTA classification); **(b)** Incisions used during the surgery; **(c)** Fluoroscopic check after the surgical procedure; **(d)** Postoperative 16th-month pelvis AP radiograph of the patient.

RESULTS

This study evaluated the clinical and surgical outcomes of patients treated with O-TEP plate-screw fixation for PSD. The mean operative time was 113.3 minutes (range 65-175), with an average blood loss of 127 ml (range 70-300) and a mean hospital stay of 2.7 days (range 2-4). Detailed demographic and injury characteristics are presented in Table 1, while surgical and clinical outcomes are summarized in Table 2. At the final follow-up, the Iowa Pelvic Score was 87.1 (range 80-95) and the Majeed Pelvic Score was 84.9 (range 78-91). No post-operative complications, implant failures, or revision surgeries were observed.

Table 1. Demographic and injury characteristics

	n	%
Sex		
Female	3	23
Male	10	77
Injury mechanism		
Motor vehicle	5	38.4
Fall from height	3	23.1
Occupational accident	3	23.1
Pedestrian	2	15.4
Body mass ındex (BMI)		
Normal (18.5≤BMI<25)	3	23
Overweight (25≤BMI<30)	6	46.1
Moderately Obese (30≤BMI<35)	4	30.7
Additional pathologies		
Femur shaft fracture	2	15.4
Radıus distal fracture	1	7.7
Humerus shaft fracture	1	7.7
Rib fracture	2	15.4
None	7	53.8
Classification (Young Burgess)		
APC 1 (+iliac crescent fx)	1	7.6
APC 2	10	77
APC 3	2	15.4
Classification AO/OTA		
B2 3D	10	77.2
B3 3D	1	7.6
C1 1AD	1	7.6
C1 2D	1	7.6
Age (years)		
Mean±SD	**Median**	**Min/Max**
40±14.8	37	21/61

DISCUSSION

Minimally invasive approaches are gaining importance in orthopedic surgery, becoming popular for their potential to reduce surgical risks and improve recovery times.[1] In treating pubic symphysis diastasis (PSD), open reduction and internal fixation with plates and screws remains the widely accepted standard.[8,10,17] However, various minimally invasive techniques offer alternatives to this traditional approach, with the total extraperitoneal (O-TEP) approach standing out as an innovative option.[16]

The O-TEP technique minimizes the surgical exposure required in standard open reduction and internal fixation, effectively transforming it into a minimally invasive procedure. This study aims to assess the preliminary clinical outcomes of the O-TEP approach for PSD treatment, highlighting its potential advantages and limitations.

Out of the total 19 cases where the procedures were performed, 2 (10%) required conversion to open surgery due to pneumoperitoneum resulting from inadvertent peritoneal perforation, leading to inadequate visualization. After conversion to open surgery, small tears in the peritoneum were observed and primarily repaired. No complications related to this were observed during postoperative follow-ups. Similarly, Küper et al.[11] successfully performed endoscopic symphyseal plating in 4 out of 7 cases using the O-TEP approach. They reported that in 2 cases, they started diagnostically and then planned to convert to open surgery, and in 1 case, they converted to open surgery due to increased end-expiratory CO2 levels. Vinet et al.[18] treated 10 PSD cases with the transabdominal preperitoneal approach (O-TAPP) and reported no conversions to open surgery.

The O-TEP and O-TAPP approaches are innovative adaptations of the total extraperitoneal approach (TEP) and transabdominal preperitoneal approach (TAPP) used by general surgeons for inguinal hernia repair. Beyond Vinet et al.'s study,[18] no other studies on the O-TAPP technique were found in the literature. To our knowledge, our study is the first case series using the O-TEP approach with short-term outcomes. Although these two studies are not sufficient to compare the advantages and disadvantages, the general surgery literature contains many studies on the TEP and TAPP techniques. Overall, these studies indicate that TEP has a higher risk of pneumoperitoneum and conversion to open surgery compared to TAPP. Additionally, the TAPP technique, which involves working in the intraperitoneal space, carries risks such as intraperitoneal organ injury, bowel obstruction, and intraperitoneal adhesions, and requires peritoneal repair.[19–21] Considering that the O-TEP and O-TAPP techniques in orthopedic surgery are adapted from the TEP and TAPP techniques in general surgery, they can be assumed to have similar advantages and disadvantages. The widespread adoption of these techniques in orthopedic surgery will allow for more objective results from an orthopedic perspective.

Table 2. Clinical and surgical outcomes

	Mean±SD	Min / Max	Median
Time to surgery (Days)	3.9±1.14	2/6	4
Surgery duration (minute) (Exclusively for Symphysial Plating)	113.3±36.08	65/175	110
Average blood loss (ml)	127±67.3	70/300	105
Postoperative hospitalization (days)	2.7±0.8	2/4	2.5
Postoperative 1st day VAS	3.7±1.5	1/6	4
Postoperative 2nd day VAS	2.2±1.03	1/4	2
Follow up (months)	21.5±6.9	12/32	21
Iowa pelvic score	87.1±4.7	80/95	86.5
Majeed Pelvic Score	84.9±4.01	78/91	85
	n	**%**	
Intraoperative complications			
Subcutaneous emphysema	2	15.4	
Postoperative complications	0	0	

In this study, no postoperative complications were observed in any patient during follow-ups. Only two patients experienced intraoperative mild subcutaneous emphysema, which resolved spontaneously during their hospital stay without causing any complaints. In the studies by Küper et al.[11] and Vinet et al.[18] on endoscopic symphyseal plating, no complications were reported. Similarly, Kabir et al., in their technical note on fully endoscopic symphyseal plating using the O-TEP approach, reported one case of subcutaneous emphysema, which resolved spontaneously on the first postoperative day without requiring any treatment.[22]

Regarding patient-related factors, despite the fact that 6 patients (46.1%) were overweight and 4 patients (30.7%) were moderately obese, the O-TEP procedure was successfully performed in all cases. Similarly, Vinet et al.[18] reported no issues related to BMI and successfully applied the O-TAPP technique to obese patients. The general surgery literature also supports the successful application of these approaches to obese patients, with several studies highlighting their advantages over open surgical methods.[23] This suggests that these techniques can be preferred in orthopedic surgery, regardless of BMI.

With respect to operative duration, the average time for endoscopic symphyseal plating alone was found to be 113.3±36.08 minutes (range: 65-175 minutes). Küper et al.[11] reported an average surgical time of 127±52 minutes (range: 30-197 minutes) for symphyseal plating with the O-TEP technique. Vinet et al.[18] reported an average surgical time of 102.5 minutes (range: 60-240 minutes) for symphyseal plating with the O-TAPP technique. Our surgical times are similar to those reported in these studies. Additionally, a recent meta-analysis comparing percutaneous cannulated screw fixation (PCSF) and open reduction and reconstruction plate and screws fixation (RPSF) for PSD treatment reported mean operative times of 37±19.1 minutes for PCSF and 68.9±13.6 minutes for RPSF.[17] Compared to endoscopic techniques, both RPSF and PCSF have shorter operative times, which can be explained by the higher learning curve associated with endoscopic techniques. This observation is consistent with the technical requirements of the O-TEP approach, as the orthopedic surgeon in the present study underwent dedicated training in laparoscopic total extraperitoneal techniques through participation in inguinal hernia procedures and initially performed the first cases with the active involvement of general surgeons, reflecting the inherent complexity and learning demands of this endoscopic technique.

The same meta-analysis reported intraoperative blood loss of 14.9±4.2 mL for PCSF and 162.7±47.6 mL for RPSF.[17] In our study, the average blood loss was 127±67.3 mL (range: 70-300 mL). Küper et al.[11] reported an average blood loss of 129±141 mL (range: 50-400 mL), and Vinet et al.[18] reported an average blood loss of 111 mL. These findings indicate that while endoscopic techniques result in more blood loss compared to percutaneous screw fixation, they result in less blood loss compared to traditional open techniques.

One notable observation from our study was the postoperative hospital stay duration. The presence of additional orthopedic pathologies in patients can impact the length of hospital stay, making the group heterogeneous. However, in our study, the average postoperative hospital stay was 2.7±0.8 days (range: 2-4 days). The literature indicates that minimally invasive methods generally result in shorter hospital stays compared to open techniques.[24–26] Studies with homogenous groups of isolated PSD cases can provide more objective data

on hospital stay durations.

An essential clinical outcome was the VAS score on postoperative days 1 and 2. Under a standardized analgesia protocol, the average VAS score was 3.7±1.5 (range: 1-6) on postoperative day 1 and 2.2±1.03 (range: 1-4) on postoperative day 2. Similarly, Vinet et al.[18] reported an average VAS score of 3 (range: 0-6) on postoperative day 1 and 2 (range: 1-5) on postoperative day 2, noting a reduced need for analgesia. Endoscopic techniques, compared to traditional approaches like the Pfannenstiel or modified Stoppa approach, involve smaller incisions and limited soft tissue dissection, resulting in reduced postoperative analgesia requirements and earlier mobilization.[27]

At the final follow-up, our patients had Majeed Pelvic Scores (MPS) and Iowa Pelvic Scores (IPS) of 84.9±4.01 (range: 78-91) and 87.1±4.7 (range: 80-95), respectively. Vinet et al.[18] reported similar scores in their case series with the O-TAPP technique. Vaidya et al.[28] found comparable Majeed scores of 83.95±15.2 (range: 51-100) for INFIX and 77.67±16.7 (range: 54-100) for plating in a comparative study. Yu et al.[29] reported similar functional outcomes in their comparative study of reconstruction plate screw fixation and percutaneous cannulated screw fixation. These functional scores suggest that endoscopic techniques provide good functional outcomes comparable to other techniques in the literature, making the endoscopic techniques a safe alternative.

While the present findings demonstrate the feasibility and favorable clinical outcomes of the endoscopic approach, they should be interpreted within the methodological limitations of a non-comparative study design. As no control group was included, direct conclusions regarding superiority over established open techniques cannot be drawn. Therefore, rather than suggesting a definitive advantage, the current results indicate that this technique may represent a minimally invasive alternative with comparable clinical outcomes in appropriately selected patients. Given its relatively recent introduction into orthopedic trauma practice, further prospective and comparative studies with larger patient cohorts are warranted to better define its role in relation to conventional open methods.

Limitations

This case series demonstrates the feasibility of the laparoscopic total extraperitoneal (O-TEP) approach for stabilizing pubic symphysis diastasis but lacks a comparative analysis with traditional methods. The small sample size, single-center, retrospective design, and minimum 12-month follow-up may limit the generalizability of the findings and assessment of long-term complications, particularly regarding implant longevity and late-onset issues. In addition, conversion to open surgery due to pneumoperitoneum occurred in 2 cases (10%), representing a technique-related limitation that should be considered when interpreting the results.

Nevertheless, the fact that the majority of cases consisted of APC type II pelvic ring injuries may be considered theoretically encouraging regarding the potential applicability of the technique in this specific injury pattern. However, the very limited number of cases with combined rotationally and vertically unstable pelvic ring injuries means that the applicability of the technique in such more complex injury patterns remains uncertain. Therefore, further studies including a wider variety of pelvic injury models are required.

CONCLUSION

This case series demonstrates that plate-screw fixation via the laparoscopic total extraperitoneal (O-TEP) approach for pubic symphysis diastasis is associated with low complication rates, minimal blood loss, and favorable functional outcomes, making it a promising alternative to open surgery for anterior pelvic ring injuries. The preliminary results indicate that O-TEP provides reduced surgical trauma and quicker recovery times. With continued advancements in technique and technology, O-TEP has the potential to expand minimally invasive options for managing complex pelvic fractures.

Ethics Committee Approval: This study was approved by the Bakırköy Dr. Sadi Konuk Training and Research Hospital Clinical Ethics Committee (Date: 07.08.2023, Decision No: 2023-15-11).

Peer-review: Externally peer-reviewed.

Authorship Contributions: Concept: V.Ö.; Design: V.Ö.; Supervision: V.Ö., M.Ç., A.D.; Resource: V.Ö.; Materials: V.Ö., M.Ç., M.E.K.; Data collection and/or processing: V.Ö.; Analysis and/or interpretation: V.Ö., B.A., O.K.; Literature review: V.Ö., M.Ç.; Writing: V.Ö.; Critical review: C.K., A.D., M.G.B., O.K.

Conflict of Interest: None declared.

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ORİJİNAL ÇALIŞMA - *ÖZ*

Pubik simfizis diyastazında minimal invaziv ufukların genişletilmesi: Ortopedik cerrahide laparoskopik total ekstraperitoneal yaklaşım (O-TEP)

AMAÇ: Bu çalışma, ortopedik cerrahide laparoskopik total ekstraperitoneal yaklaşım (O-TEP) kullanılarak plak-vida ile tedavi edilen pubik simfizis diyastazı (PSD) olgularının ön klinik ve fonksiyonel sonuçlarını sunmayı amaçlamaktadır.

GEREÇ VE YÖNTEM: Bu retrospektif çalışmaya Mart 2022 ile Mayıs 2025 arasında PSD nedeniyle O-TEP yaklaşımı kullanılarak simfizis pubis plaklaması yapılan ve en az 12 ay takip edilen 13 hasta dahil edildi. Demografik özellikler, yaralanma mekanizmaları, ek patolojiler ve yaralanma sınıflamaları (Young-Burgess ve AO-OTA) kaydedildi. Cerrahi ayrıntılar (süre, kan kaybı, hastanede kalış süresi ve postoperatif takip süresi) değerlendirildi. Klinik ve fonksiyonel sonuçlar, postoperatif VAS skorları ile son kontrolde Iowa Pelvik ve Majeed Pelvik skorları kullanılarak değerlendirildi. Ayrıca implant yetmezliği, revizyon cerrahisi ihtiyacı ve cerrahiye bağlı komplikasyonlar da incelendi.

BULGULAR: Hastaların yaş ortalaması 40±14.8 yıl (21–61) idi. Cinsiyet dağılımı %77 erkek ve %23 kadın idi. Ortalama ameliyat süresi 113±36 dakika (65–175), ortalama kan kaybı 127±67.3 ml (70–300) ve ortalama postoperatif hastanede kalış süresi 2.7±0.8 gün (2–4) olarak bulundu. Enfeksiyon, implant yetmezliği, redüksiyon kaybı veya revizyon ihtiyacı gibi postoperatif komplikasyon görülmedi. Postoperatif 1. ve 2. gün VAS skorları sırasıyla 3.7±1.5 (1–6) ve 2.2±1.03 (1–4) idi. Ortalama takip süresi 21.5±6.9 ay (12–32) olup, ortalama Iowa Pelvik Skoru 87.1±4.7 (80–95), ortalama Majeed Skoru ise 84.9±4.01 (78–91) bulundu.

SONUÇ: Ortopedik cerrahide laparoskopik total ekstraperitoneal yaklaşım (O-TEP), seçilmiş anterior pelvik halka yaralanmalarının cerrahi tedavisinde cerrahların mevcut seçeneklerini genişleten, klinik ve radyolojik olarak tatmin edici sonuçlar sunan yenilikçi bir minimal invaziv yöntemdir.

Anahtar sözcükler: Endoskopi; laparoskopi; ortopedik total ekstraperitoneal yaklaşım (O-TEP); pubik simfizis diyastazı; pelvik halka yaralanması.

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