

## The Effect of Autologous Temporal Fascia Graft on Erectile Function and Psychometric Properties in Peyronie's Disease Patients

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**Purpose:** The aim of this study is to evaluate the results of the surgical technique used by the authors on Peyronie's disease (PD) patients who underwent surgical treatment with a temporalis fascia autograft.

**Materials and Methods:** Patients with normal erectile functions and  $> 60^\circ$  penile curvature who underwent surgical treatment with temporalis fascia autografts were included in this retrospective study. The patients were recruited between January 2017 and May 2021. Preoperative assessment included the International Index of Erectile Function erectile function (IIEF-EF) score, penile duplex and penile curvature angle measurement. Postoperative self-reports, penile deformity, IIEF-EF scores and the Patient Global Impression of Improvement (PGI-I) questionnaire were assessed every three months.

**Results:** Twenty-two patients with a mean age of  $52.09 \pm 6.61$  years were included in the study, and no major complications developed in any case. Postoperative assessment revealed curvature relapse in seven patients (31.8%), although no intervention was performed on five patients with  $< 20^\circ$  curvature. Six patients experienced a postoperative decrease in penile length and erectile function was completely preserved in 68.18%. The mean level of satisfaction with surgery measured using the visual analogue scale was  $79.13 \pm 21.23$ .

**Conclusion:** The temporalis fascia graft, thin and durable graft, is a highly successful therapeutic option in the surgical treatment of PD patients and a good alternative in terms of its cosmetic and functional results.

**Key Words:** Peyronie's disease; temporalis fascia; autologous graft; curvature.

### INTRODUCTION

Peyronie's disease (PD) is a benign soft tissue disease characterized by the involvement of the tunica albuginea layer of the penis. Although the pathophysiology of the disease has not been fully explained, the most widely accepted theory involves fibroblast proliferation with inflammation caused by recurrent traumas that results in abnormal collagen accumulation.<sup>(1)</sup> This accumulation of collagen produces fibrous tissue, and this gives rise to pathologies such as pain, penile deformity and sexual dysfunction. Estimates of the prevalence of PD in the general population are inconsistent and not entirely reliable, although a number of prevalence studies have been reported from across the world.<sup>(2)</sup> However, a recent survey from Turkey suggests that the prevalence of definitive and probable cases of PD in the country is approximately 5.3%.<sup>(3)</sup>

PD consists of two phases: acute and chronic. The chronic phase is known as the fibrotic phase, during which the pain regresses, hard palpable calcific plaques form and penile deformity stabilizes. It thus results in the formation of an inelastic plaque in the tunica albuginea. Although spontaneous recovery has been reported in 3-13% of patients, the manifestation worsens in 30-50%, and these generally require active treatment. However, no change is observed in 47-67% of patients.<sup>(4)</sup> When the disease becomes stable, surgical treatment is the gold standard in severe cases. Surgical treatment for PD can be categorized into three main groups. The

first involves interventions in which the convex part of the penis exhibiting curvature is shortened, the second involves interventions in which the concave part of the penis with curvature is extended and the third involves penile prosthesis implantation. The choice of surgery depends on the localization of the curvature, the type of deformity, penile length and the presence of erection. Tunical shortening procedures are preferred for curvatures  $< 60^\circ$  and grafting methods for those  $> 60^\circ$ .<sup>(5)</sup> There are four different graft types for PD: autografts, allografts, xenografts and synthetic grafts.<sup>(6)</sup> Each has its own specific advantages and disadvantages.<sup>(7)</sup> Autologous grafts are very economical, entail a low infection risk and exhibit good integration into host tissue. However, their main disadvantage is the higher morbidity compared to other graft types due to the lengthy surgery times.<sup>(8)</sup> In light of all these aspects, autologous grafts are recommended in many guidelines in the current age of cost awareness. Indeed, the autologous temporal fascia graft is recommended in the guidelines of the European Association of Urology (EAU) and the Canadian Urological Association.<sup>(6,9)</sup> Although many guidelines recommend the temporal fascia graft, to the best of our knowledge, only one study to date has been conducted on it.<sup>(10)</sup> The aim of this study is to evaluate the surgical and functional efficiency of corporoplasty surgery performed with a temporal graft, and consider its effects on post-surgery sexual functions and postoperative complications.

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**Table 1.** Patients' demographics and clinical data

Case no.	Age (years)	CA(degree)	CD	DD (months)	ST (mins)	Plaque (I/E)	HS (day)	Follow-up (months)	CAS
1	42	60	Lateral	8	88	I	3	33	No
2	42	75	Lateral	12	95	I	3	15	No
3	42	70	Dorsal	18	120	I	3	18	No
4	43	80	Lateral	14	100	I	3	15	No
5	44	90	Ventral	12	84	I	3	24	No
6	48	85	Dorsal	15	100	E	3	27	<20°
7	49	65	Ventral	20	90	I	3	21	No
8	50	82	Dorsal	18	110	I	3	18	<20°
9	51	70	Dorsal	15	80	I	3	12	No
10	51	75	Dorsal	18	90	I	3	18	No
11	52	74	Ventral	12	105	I	3	15	No
12	53	67	Lateral	15	75	I	3	21	No
13	53	90	Dorsal	15	95	I	3	24	<20°
14	54	95	Dorsal	12	80	I	3	15	No
15	55	70	Ventral	15	110	E	3	24	50°
16	57	88	Dorsal	14	100	E	3	15	<20°
17	58	70	Lateral	16	90	I	4	15	No
18	59	95	Dorsal	15	100	E	3	18	No
19	59	70	Lateral	24	120	I	4	30	60°
20	59	80	Dorsal	12	80	I	3	18	No
21	62	80	Dorsal	18	90	E	3	18	No
22	63	90	Dorsal	15	130	I	3	21	<20°

**Abbreviations:** CA, Curvature angle; CD, Curvature direction; DD, Disease duration; I/E, Incision/Excision; HS, Hospital stay; ST, Surgical time; HS, Hospital stay; CAS, Curvature after surgery.

## MATERIALS AND METHODS

### Study population

Following the receipt of ethical committee approval (Samsun Training and Research Hospital, Medical Ethics Committee, Ref No. GOKA/2020/8/3 Date: 05.06.2020), data from patients with no or mild erectile dysfunction (ED) who had undergone surgical treatment at the Samsun University, Samsun Training and Research Hospital, Department of Urology involving temporal fascia autografts due to > 60° curvature between January 2017 and May 2021 were evaluated retrospectively. Patients with no or mild ED after evaluation based on the International Index of Erectile Func-

tion erectile function (IIEF-EF) domain, but with difficulty in coital activity, with stable PD of > 6 months, with > 60° curvature and with a minimum follow-up period of one year were included in the study.

The following criteria were used for patient exclusion:

1. Patients with mild to moderate, moderate, or severe ED before surgery;
2. Patients with < 60° penile curvature;
3. Patients with previous histories of penile surgery;
4. Patients with PD durations of less than six months and
5. Patients who underwent penile prosthesis implantation, Nesbit or plication techniques during surgery.

**Table 2.** Preoperative and postoperative assessment of IIEF-EF scores and penile length

Case no.	IIEF-EF score before surgery	IIEF-EF score after surgery	Penile length before surgery (cm)	Penile length after surgery (cm)
1	26	24	12.4	13
2	25	25	13.1	13.6
3	25	26	12.9	13.9
4	24	25	13.2	14.1
5	25	26	13.7	14.6
6	25	26	13.4	12.9
7	26	26	12.8	13.6
8	25	25	14.1	13.2
9	26	25	13.5	14.4
10	26	26	12.7	13.7
11	24	25	13.8	14.5
12	24	25	13.1	13.9
13	26	24	14.2	13.5
14	24	23	12.3	13.3
15	25	24	12.6	12.6
16	25	26	14	13.5
17	25	26	13.7	14.4
18	24	25	12.6	13.2
19	23	19	12.9	12.4
20	23	24	13.1	13.5
21	23	23	12.4	12.2
22	23	22	13.5	14

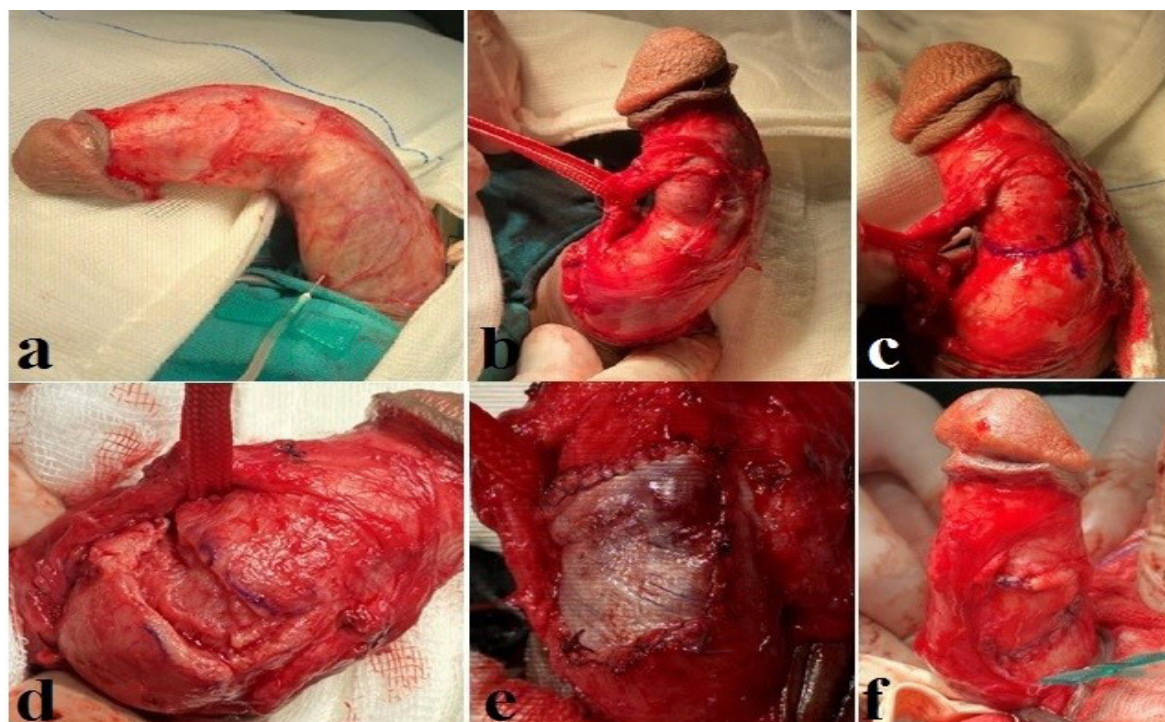
**Abbreviation:** IIEF-EF, International Index of Erectile Function erectile function.

**Table 3.** Preoperative and postoperative patient satisfaction

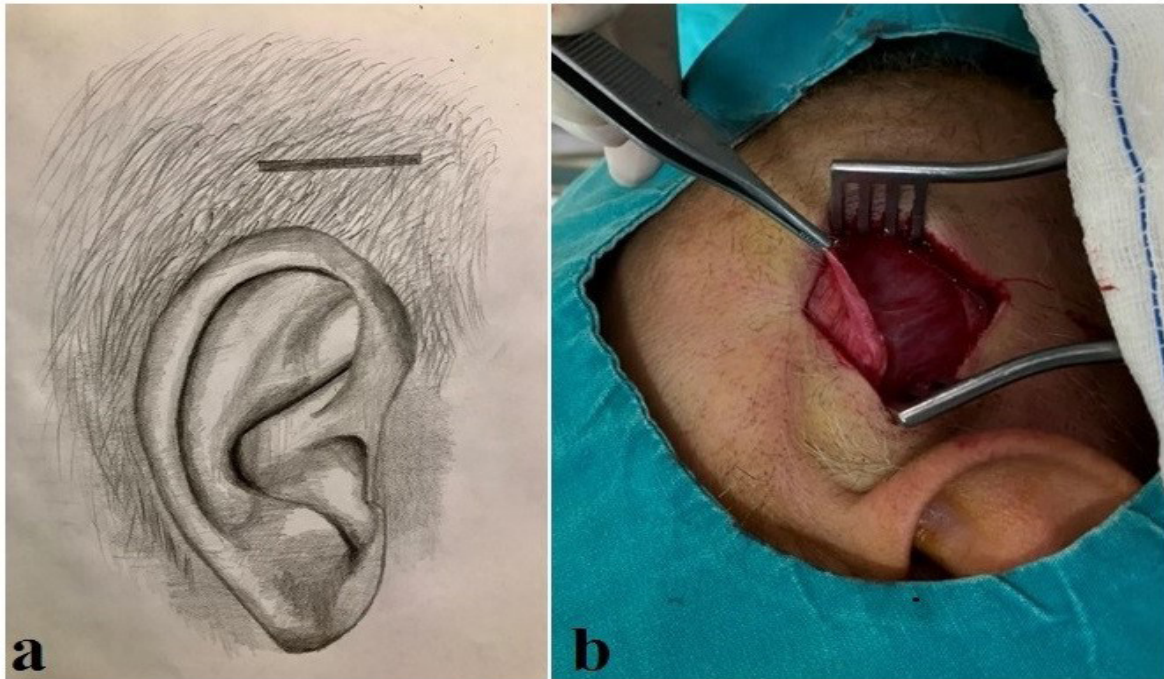
Case no.	Satisfaction with surgery	Patient Global Impression of Improvement	Willingness to the repeat procedure	Willingness to recommend the procedure
1	90	Very much better	Yes	Yes
2	85	Very much better	Yes	Yes
3	90	Much better	Yes	Yes
4	90	Very much better	Yes	Yes
5	95	Very much better	Yes	Yes
6	90	Very much better	Yes	Yes
7	85	Much better	Yes	Yes
8	60	A little better	Yes	Yes
9	92	Very much better	Yes	Yes
10	90	Very much better	Yes	Yes
11	86	Very much better	Yes	Yes
12	85	Very much better	Yes	Yes
13	82	A little better	Yes	Yes
14	95	Very much better	Yes	Yes
15	30	No change	No	No
16	88	Very much better	Yes	Yes
17	92	Very much better	Yes	Yes
18	85	Much better	Yes	Yes
19	10	Much worse	No	No
20	80	Much better	Yes	Yes
21	65	A little better	Yes	Yes
22	76	Much better	No	No

Histories, physical examination results, age, anatomic abnormalities of the urinary tract, drug use and American Society of Anesthesiologists (ASA) scores were recorded. All patients underwent detailed penile examinations after intracavernous 20- $\mu$ g prostaglandin E1 injection. All patients' penile lengths were measured before surgery. Penile curvature angles were measured using a protractor after penile rigidity was achieved. For penile curvature measurement, a midline beginning from the proximal penile shaft was determined using a ruler. A straight line was then drawn from the starting point of the curve to the glans, such as to intersect with the straight rule in the midline. The degree of curvature

was determined by protractor measurements of the angle between the two intersecting lines. Plaque location, number and size were noted in detail. Before surgery, every patient was alerted to the risks of the intervention and the possibility of postoperative discomfort, recurrence of the curvature, glans hypoesthesia and de novo ED. For cosmetic reasons, temporal grafts were employed only for patients with hair or using hairpieces in daily life. All patients provided detailed forms consenting to the use of their clinical details in scientific research, as required within the scope of our hospital's regulations.



**Figure 1.** The different stages of the operation: (a) Artificial erection was achieved; (b) The neurovascular bundle was mobilised; (c) Marking of the incision region; (d) An H-shaped incision was made on the plaque; (e) The autograft was filled in the defect area; (f) Control of the penis with an artificial erection.



**Figure 2.** Harvesting the temporal fascia graft: (a) The incision region; (b) Harvesting the graft.

**Surgical technique**

After all patients had been given preoperative prophylactic antibiotics, the surgical procedure was performed under general anaesthesia.<sup>(11)</sup> Following degloving with a peripheral incision, artificial erection was achieved by means of saline injection. Buck's fascia was dissected first. Following dissection from the tunica albuginea, the neurovascular bundle was then very carefully mobilised widely between the tip and the base of the penis using surgical loupes. The urethra was mobilised in ventral curvature using a parallel incision. An H-shaped incision was made on the plaque, which was either removed or mobilised at the corporal body and left in place. Mostly calcified and large plaques were excised (Figure 1).

Simultaneously with the surgical procedure, the temporal fascia to be used as the autograft was removed by an otorhinolaryngologist using a standard technique with an auricular incision and adapted to the donor site area on a back-table. The autograft was then laid with the outer face facing outwards, and the defect area was

filled using a waterproof 5-0 prolene suture in both dorsal and ventral curvatures. Any leakage or residual curvature was checked by means of intraoperative erection. If complete straightening was not achieved, fixation and additional small plications were applied from the contralateral side of the penis to complete the straightening. If significant curvature was still observed, additional incision and grafting were performed. Using surgical loupes, the neurovascular band was protected and Buck's fascia was sutured with 3-0 vicryl. The surgical incision was closed, and an elastic band was stretched and placed firmly around the penis in a vertical manner for sufficient haemostatic pressure. All operations were performed by the same surgeon (M.U.).

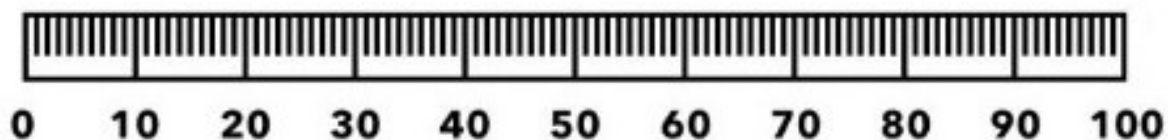
**Removal of the temporal fascia graft**

The temporal muscle was accessed through a 1.5 cm horizontal incision made from the upper border of the auricula 1 cm towards the superior. The temporal fascia was located, and the fibrous tissues attached to it were dissected. The temporal fascia, measuring 4 x 5 cm in

**Please mark the level of satisfaction with your surgery.**

**0 : Very dissatisfied**

**100: Very satisfied**



**Figure 3.** Visual analogue scale assessing patient satisfaction with the operation on a scale of 0 – 100.

size, was released from the lower edge and removed with a scalpel (**Figure 2**). The graft was taken to the back-table and laid on a glass plate. The surrounding alveolar and adventitial tissues were cleaned. The donor site was then prepared for the graft, which was subsequently harvested. The graft was then washed in saline solution and made ready for the surgical site.

### Postoperative evaluation

The urethral catheter was removed on postoperative day one. Antibiotic therapy continued for two days. The elastic bandage was removed 48 hours post-operation. The patients were discharged on day three, and postoperative 0.1 mg ethinyl estradiol tablets were given orally for two weeks in order to prevent undesired reflex erections that might damage the graft sutures. The patients were advised to discontinue ethinyl estradiol therapy two weeks after surgery and to massage the penis by stretching it lightly twice a day for five minutes. Starting from the first postoperative month, phosphodiesterase-5 inhibitors (tadalafil 5 mg) were administered twice a week for two months to increase penile vasodilation. Patients were told to avoid sexual intercourse for six weeks. Patients' IIEF-EFs, penile deformities, penile lengths and surgery and donor site areas were initially evaluated and recorded one month post-operation and subsequently, once every three months.

All patients were asked to complete the IIEF-EF and Patient Global Impression of Improvement (PGI-I) questionnaires. The IIEF-EF questions 1, 2, 3, 4, 5 and 15 were employed. The six items on the IIEF-EF include detailed questions concerning erection frequency, erection firmness, penetration ability, maintenance frequency, maintenance ability and erection confidence. Participants needed to report sexual activity at least once during the four weeks before responding to the questions. Each item was based on a five-point Likert scale.<sup>(12)</sup> Each patient's responses to all six items of the IIEF-EF were summed to yield a total EF score, ranging from six to 30. Scores lower than 26 indicated the presence of ED (22-25 mild ED and 17-21 mild to moderate ED).<sup>(13)</sup> The PGI-I asks patients to compare their current condition with their preoperative state and is designed to assess the patient's impression of changes in his own condition. Answers are given on a seven-point scale scored as 1: very much better; 2: much better; 3: a little better; 4: no change; 5: a little worse; 6: much worse; or 7: very much worse.<sup>(14)</sup> Patient satisfaction with surgery was also measured numerically using a visual analogue scale from 0 (very dissatisfied) to 100 (very satisfied) (**Figure 3**). Levels of regret were investigated by asking about willingness to repeat the procedure and willingness to recommend it.

Data from patients' final control visits were included in the study.

### Statistical analysis

The data were analyzed using the Statistical Package for Social Sciences (IBM Corp., Armonk, NY, USA) version 25 software. Nominal data were expressed as frequencies and percentages while continuous data were expressed as mean  $\pm$  standard deviation. The Kolmogorov Smirnov test and Shapiro-Wilk test were applied to determine the normality of distribution of continuous variables. The paired samples *t* test was employed to evaluate pre- and postoperative differences. *P* values  $<$  .05 were considered statistically significant.

## RESULTS

Twenty-two patients with a mean age of  $52.09 \pm 6.61$  years were included in the study. Two (9.1%) patients had diabetes mellitus (DM). The participants' mean ASA score was  $1.68 \pm 0.56$ , and their mean hospitalisation time was  $3.09 \pm 0.29$  days.

The mean disease duration was  $15.13 \pm 3.37$  months, and eight (36.4%) patients had a previous history of unsuccessful medical treatment. None of the patients had previously received intralesional or topical therapies. All penile curvatures exceeded  $60^\circ$ , the mean curvature being  $78.22^\circ \pm 10.12^\circ$ . Twelve (54.5%) patients had curvature in the dorsal area, six (27.2%) in the dorso-lateral area and four (18.2%) in the ventral area. One (4.5%) patient had two plaques, while the rest had a single plaque. One curvature was present in all patients. The entire surgical period was  $96.9 \pm 14.45$  min, including the removal and application of the temporal fascia graft. Patient characteristics and outcomes are presented in Table 1. Six (27.27%) patients developed pain due to erection in the early postoperative period. Although patients experienced mild symptoms in both the donor (harvest) and penile regions, such as swelling, numbness and rash that resolved within a few days, none developed severe complications such as wound infection and hematoma, and no graft rejection occurred.

The mean follow-up time was  $19.77 \pm 5.37$  months. Curvature relapse was observed in seven (31.8%) patients. Five of these seven were placed under clinical follow-up, the other two being re-operated. A temporal fascia graft was applied to the patient with a  $> 60^\circ$  relapse curvature, while re-operation with Nesbit suture was performed on the patient with a  $50^\circ$  curvature. No intervention was performed on the five patients with curvatures  $< 20^\circ$ ; they received conservative follow-up. When patients with curvatures  $< 20^\circ$  were included, our success rate was 90.9%.

Mean preoperative penile length was  $13.18 \pm 0.57$  cm, compared to  $13.54 \pm 0.66$  cm after surgery. The difference was not statistically significant (*P* = .059). Penile shortening was observed in six (27.2%) patients. No patients experienced decreased penile sensation.

The mean preoperative IIEF-EF value among the patients in this study was  $24.63 \pm 1.04$ , compared to  $24.54 \pm 1.68$  at the final check-ups. No significant difference was found between IIEF-EF values in the preoperative and postoperative periods (*P* = .831). Erectile function was completely preserved in 68.1%. One patient had mild to moderate ED with an IIEF-EF score of 19 (before surgery it was 23) (**Table 2**).

The mean level of satisfaction with surgery measured using the visual analogue scale was  $79.13 \pm 21.23$ . Analysis of the PG-I questionnaire responses showed that 17 (77.2%) patients felt either "very much" or "much" better. Three patients (13.6%) reported being unwilling to repeat the procedure and would not recommend it to others (**Table 3**).

## DISCUSSION

The results of this study show that the autologous temporal fascia graft, provides applicable, reliable and satisfactory results. PD is generally seen between the ages of 50 and 60, and the average age in the present study is similar to that of the previous literature.<sup>(6)</sup> Full recovery occurred in 15 (68.18%) patients in this study and improvement ( $< 20^\circ$  curvature, all dorsal, not hin-

dering coitus and not requiring medical or surgical treatment) in five (22.72%). Two patients (9.1%) required re-operation (one repair with a temporal flap and one Nesbit suture). Our general success rate was 90.9%. Only one previous study involved the temporal fascia. In their study of 12 patients, Gelbard and Hayden reported a success rate of 100%.<sup>(10)</sup> In another study of 12 patients in which the autologous fascia lata was used, Kargi et al. also reported a success rate of 100%.<sup>(15)</sup> The present research involved the highest number of cases involving the use of the autologous fascia graft to date, and our general success rate is similar to that of the previous literature.

Tunical lengthening is one of the three major reconstruction types in penile curvature surgery.<sup>(6)</sup> This procedure is performed on patients with advanced penile curvature or hourglass deformity, the aim being to minimize the penile shortening. In this procedure, the graft material is an important aspect. The types of grafts most employed in previous studies are dermis grafts, with 718 patients, vein grafts, with 690 patients and buccal mucosa grafts, which are currently highly popular, with 137 patients. The general success rates of these grafts are 81.2%, 85.6% and 94.1%, respectively.<sup>(6)</sup> Two studies were conducted with autologous fascial grafts in the literature, both reporting success rates of 100%.<sup>(10,15)</sup> This rate is much higher than with other autologous grafts (dermis, venous or buccal mucosa). However, the total number of patients in the studies conducted with autologous fascia are low, in the region of 24. This low number represents a handicap for autologous fascia.

Despite their low risk of infection and good integration into host tissue, morbidity with autologous grafts is higher than with other types of grafts due to their long surgical times and the involvement of a second surgical site during the operation.<sup>(7)</sup> Thus, autologous grafts have recently fallen from favour since their extended surgery time increases morbidity.<sup>(16,17)</sup> In the present study, the mean total surgery time was  $99.68 \pm 17.92$  min. A simultaneous operation was performed by an experienced otorhinolaryngologist in order to reduce the operative time, with a 4 x 5 cm temporal fascia flap being made ready for the donor site prior to preparation of the surgical bed. This bestowed a major advantage in terms of time. The average operative time in a study conducted with collagen sheets was 79 min.<sup>(18)</sup> Average surgical times were 130 min in a study using lingual mucosa, 115 min in a study involving buccal mucosa, 66 min in a study using xenograft pericardium and 130.5 minutes in a study using autologous saphenous vein grafts, while studies using xenograft small intestinal submucosa (SIS) have reported average surgical times of 151 to 165 min.<sup>(19-23)</sup> Simultaneous otorhinolaryngologist support during the operation significantly reduced our operative time, with the entire duration being approximately that of non-autologous grafts.

Despite their high functional and anatomic success rates, autologous grafts can also cause long-term complications such as de novo ED, penile shortening, permanent or temporary penile curvature and short-term complications such as hematoma, contraction and penile desensitization in the graft area, although the incidences are low.<sup>(24)</sup> Six patients in the present study experienced pain due to erection in the early postoperative period, although no specific analgesic therapy was administered.

No severe complications such as wound infection in either the donor or surgical sites or hematoma occurred in any patients, and no graft rejection was observed. In their study involving the buccal mucosa, Zucchi et al. observed no complications in the graft or surgical area, and the early postoperative period complications detected were similar to the results of the present study.<sup>(25)</sup>

Consistent with the present study, Salem et al. observed no complications other than swelling and numbness in their lingual mucosa-based study.<sup>(19)</sup> In the only study conducted using temporal fascia in the literature, Gelbard and Hayden reported no major complications such as wound infection or hematoma in either the graft or surgical areas. Pain resulting from erection did develop in their patients, although this resolved in the second postoperative week.<sup>(10)</sup>

Kargi et al. reported no complications in their study using autologous fascia lata.<sup>(15)</sup> In a study using SIS material, Valente et al. reported infective hematoma in one patient and postoperative pain resulting from erection in seven.<sup>(22)</sup> Kayıgil et al. compared the effects of acellular matrix and autologous vein grafts and reported major complications such as haemorrhage and infection.<sup>(21)</sup> Early complication rates for both autologous and non-autologous grafts are very low and similar to one another.

None of the patients in the present study exhibited postoperative decreased penile sensation. Furthermore, despite the low mean postoperative IIEF-EF values, there was no significant difference between preoperative and postoperative IIEF-EF evaluations. We attribute the decreased penile sensation in this study to the fact that we were very cautious during the neurovascular bundle dissection, surgical loupes were employed during the operation and no vascular injury occurred. Postoperative penile shortening was noted in six patients. Objective measurements revealed a postoperative penile shortening rate of 27.2%.

Currently, the most widely used grafts are made of allograft or xenograft pericardium or thin SIS grafts made of type I collagen-based xenogeneic graft.<sup>(6-10)</sup> Although the reported success rate for pericardium grafts in the literature is 56–100%, postoperative ED rates are 30–63% and penile shortening rates are between 0% and 33%. The equivalent rates for SIS grafts are 55.6–100%, 0–55.6% and 0–66%, respectively.<sup>(6)</sup> In the present study, the success rate was 90.9%, the ED rate was 31.8% and the penile shortening rate was 27.2%. Although our patient number was relatively low and the values cited for the other two grafts were derived from meta-analyses, these values nevertheless show that the temporal fascia graft has a level of success capable of competing with the other two grafts.

The mean level of satisfaction with surgery measured using the visual analogue scale was  $79.13 \pm 21.23$ . Analysis showed that 77.2% of patients felt "much better" compared to the preoperative period, although 13.6% reported being unwilling to repeat the procedure and that they would not recommend it to others. Valente et al. reported an unwilling to repeat the procedure of 21.4% in their study involving a similar number of patients as the present research.<sup>(22)</sup> From that perspective, this study's findings are consistent with Valente et al.'s. The use of non-autologous grafts has increased as they do not cause secondary wounds and due to features such as easy availability, decreased operative time, easy

use and low morbidity.<sup>(18)</sup> However, their principal disadvantage is their high cost.<sup>(16)</sup> The average price of bio-compatible grafts commonly used in Europe is between €500 and €1000, although with the use of postoperative vacuum devices, this can be as high as €1500–2000.<sup>(25)</sup> Autologous grafts appear to represent a more appropriate option since they contain autologous tissue, pose no risk of foreign body reaction or allergy, are easily available during surgery and do not entail additional economic costs. Although their principal disadvantage is surgical time, this can be eliminated with intraoperative support from other branches.

Buccal grafts can cause swelling in the mouth, numbness, and difficulty in chewing in the postoperative period. Saphenous vein grafts can lead to prolonged lymphatic loss and lymphocele. Tunica albuginea grafts are suitable for small-size, but not for larger defects. They also complicate future penile surgeries, such as prostheses. In the light of these features of autologous grafts, the temporal fascia offers significant advantages over other autologous grafts. The greatest advantage of temporal fascia grafts over allografts is their low cost, and that no immunological reaction develops to the temporal fascia.

There are several limitations to this study, particularly its retrospective nature and the relatively low patient number. In addition, the important clinical factor of quality of life was not included in the study since it was not recorded regularly in the preoperative period. Furthermore, significant factors such as postoperative levels of regret over surgery and partner satisfaction were not evaluated. Finally, our follow-up period was relatively short, and our complication rates may possibly change over the long term. We think that longer follow-up studies with larger numbers of patients are needed to confirm the reliability of our findings.

## CONCLUSIONS

The temporal fascia is very easy to remove surgically, easy to manipulate due to its hard and thin membrane-shaped appearance, and can also quickly be prepared for the donor site area on the back table. We therefore conclude that, with its high success and low complication rates, the temporal fascia is the most suitable option for patients with mild ED but with large plaques and severe deformity. But prospective studies with a larger population and longer follow-up are needed to validate such findings.

## CONFLICT OF INTEREST

There is no conflict of interest in this study.

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