

Research Article

SURGICAL OUTCOMES OF FRONTALIS SUSPENSION USING AUTOGENOUS FASCIA LATA FOR CONGENITAL PTOSIS AT HUE ODONTO-MAXILLOFACIAL HOSPITAL

¹Nguyen Xuan Vu, ²Le Thua Trung Hau, ²Tran Dinh Thang, ³Pham Viet My, ³*Hoang Minh Tu

¹Ho Chi Minh City Dermatology Hospital, 2 Nguyen Thong Street, Ward 6, District 3, Ho Chi Minh City, Vietnam.

²Hue City Dental and Maxillofacial Hospital, No 41 and 51 Nguyen Hue Street, Thuan Hoa Ward, Hue City, Vietnam.

³Can Tho University of Medicine and Pharmacy, No. 179, Nguyen Van Cu Street, Tan An Ward, Can Tho City, Vietnam.

Received 19th April 2026; Accepted 20th May 2026; Published online 30th June 2026

ABSTRACT

Congenital ptosis may affect both visual development and facial aesthetics, especially in patients with moderate-to-severe ptosis and poor levator function. This prospective descriptive study aimed to evaluate the clinical characteristics and short-term surgical outcomes of frontalis suspension using autogenous fascia lata. The study included 31 patients with moderate or severe congenital ptosis and poor upper eyelid levator function who underwent surgery at Hue Odonto-Maxillofacial Hospital from January 2024 to October 2024. The mean age was 12.3 ± 6.4 years, and males accounted for 48.3% of the study population. Unilateral ptosis was the most common presentation, accounting for 67.7% of cases. At 1 month after surgery, 93.5% of patients achieved good overall surgical outcomes, and these results remained stable at the 3-month follow-up. Good functional correction and good aesthetic outcomes were each observed in 90.3% of patients at both 1 and 3 months postoperatively. The complication rate was low, with transient exposure conjunctivitis in 3.2% of patients and under correction in 6.4%. No cases of wound infection, graft extrusion, granuloma formation, or donor-site hematoma were observed. In this study, frontalis suspension using autogenous fascia lata was associated with satisfactory short-term functional and aesthetic outcomes and a low rate of postoperative complications in patients with congenital ptosis and poor levator function. Further studies with larger sample sizes, comparative designs, and longer follow-up periods are needed to better evaluate the long-term outcomes of this surgical technique.

Keywords: congenital ptosis; frontalis suspension; autogenous fascia lata; levator dysfunction; ptosis surgery.

INTRODUCTION

Congenital ptosis is a common eyelid disorder caused by poor development of the levator palpebrae superioris muscle, resulting in drooping of the upper eyelid. If untreated, the condition may obstruct the visual axis, leading to amblyopia, refractive errors, abnormal head posture, and impaired facial aesthetics (Hu, 1987; SooHoo *et al.*, 2014). Surgical correction is the standard treatment, and the procedure is selected according to the severity of ptosis and residual levator muscle function. Frontalis suspension is recommended for patients with moderate-to-severe congenital ptosis and poor levator function. Various suspension materials have been used, including silicone rods, polypropylene sutures, preserved fascia lata, and autogenous fascia lata (Patipa, 1994; SooHoo *et al.*, 2014).

Autogenous fascia lata is widely considered the preferred suspension material because of its excellent biocompatibility, long-term durability, and low rates of infection, extrusion, and recurrence (Crawford, 1977; Leibovitch *et al.*, 2003). Previous studies have reported favorable functional and cosmetic outcomes following frontalis suspension using autogenous fascia lata (Lee & Yoon, 2009; Philandrianos *et al.*, 2010). However, reports from different clinical settings remain limited, and postoperative outcomes may vary according to surgical techniques and patient characteristics (Morris *et al.*, 2008; Garrott *et al.*, 2010). Therefore, this study was conducted to evaluate the clinical characteristics of congenital ptosis and the surgical outcomes of frontalis suspension using autogenous fascia lata at Hue Odonto-Maxillofacial Hospital.

MATERIALS AND METHODS

Materials: The study included 31 patients diagnosed with moderate or severe congenital ptosis accompanied by poor or absent levator muscle function (levator excursion < 4 mm) who underwent clinical examination and surgical treatment using the frontalis suspension technique with autogenous fascia lata at the Department of Maxillofacial Plastic and Reconstructive Surgery, Hue Odonto-Maxillofacial Hospital, from January 2024 to October 2024.

Inclusion criteria: Patients were eligible for inclusion if they met all of the following criteria: (1) diagnosis of simple congenital ptosis or congenital ptosis associated with congenital narrow palpebral fissure, epicanthus, or telecanthus; (2) moderate or severe ptosis with poor or absent levator function, defined as levator excursion < 4 mm; (3) patients who had not undergone previous surgical treatment or had failed previous frontalis suspension surgery using synthetic materials; and (4) patients or their legal guardians agreed to participate and were able to attend follow-up visits for at least 3 months after surgery.

Exclusion criteria: Patients were excluded if they met any of the following criteria: (1) Patients with active eye infections, such as corneal ulcers or dacryocystitis. (2) Patients with congenital ptosis accompanied by superior rectus muscle palsy or Marcus-Gunn syndrome. (3) Patients with ptosis caused by other factors like trauma or myasthenia gravis.

Study design and sampling method: The sample size included 31 patients. The study used consecutive convenience sampling, selecting all patients who met the inclusion criteria and did not meet the exclusion criteria during the study period.

*Corresponding Author: Hoang Minh Tu,

1Can Tho University of Medicine and Pharmacy, No. 179, Nguyen Van Cu Street, Tan An Ward, Can Tho City, Vietnam.

The following information was collected for each participant:(1) General characteristics of the patients (name, age, sex, and history of previous surgery). (2) Clinical characteristics: severity of ptosis, levator muscle function, and health condition of the eye (cornea, pupil, lacrimal system). (3) Evaluation of surgical results: assessment at 1 week, 1 month, and 3 months after surgery to record changes in ptosis severity, aesthetic results, and postoperative complications.

Data collection and clinical measurements: A standardized questionnaire was used, and clinical examinations were performed before and after surgery. Medical records were reviewed, and patients were followed at 1 week, 1 month, and 3 months after surgery using standardized data collection forms.

Clinical assessment instruments included visual acuity charts, trial lens boxes, direct ophthalmoscopes, slit-lamp microscopes, millimeter rulers, surgical instrument kits for ptosis surgery, and data collection forms.

The surgical procedure was standardised as follows: the autogenous fascia lata graft was harvested from the patient's thigh using a fascia stripper, and then passed through small incisions in the upper eyelid and eyebrow to fix the upper eyelid to the frontalis muscle.

Data collection steps: (1) Take medical history and perform a full clinical examination to select patients. (2) Prepare patients before surgery. (3) Perform the surgery. (4) Provide postoperative care and evaluate the surgical results. (5) Monitor and re-examine patients for 1 week, 1 month, and 3 months after surgery. (6) Enter and process the collected data.

Statistical analysis: Data were analyzed using IBM SPSS Statistics version 22.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were applied. Qualitative variables (such as gender, affected side, ptosis severity, clinical type, and postoperative outcomes) were presented as frequencies (n) and percentages (%). Quantitative variables (such as age) were presented as means±standard deviation (SD), with minimum and maximum values. Since this was a prospective descriptive study, descriptive trends and percentages of functional correction, aesthetic results, and complications were calculated for each follow-up interval (1 week, 1 month, and 3 months).

Ethical considerations: All participants or their legal guardians were informed about the purpose and procedures of the study before enrollment. Written informed consent was obtained prior to participation. Personal information was kept confidential and used solely for research purposes. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

RESULTS

Baseline characteristics of the study participants

The study enrolled a total of 31 patients. The age distribution of the patients is presented in Table 1.

Table 1. Age characteristics of the study participants

Age group (years)	n	%
≤3	2	6.4
4-18	26	83.9
≥19	3	9.7
Total	31	100
Mean age(years)	12.3±6.4	
Age range (years)	3 - 58	

The mean age of the study participants was 12.3 ± 6.4 years (range, 3–58 years). Patients aged 4-18 years constituted the largest age group, accounting for 83.9% of the study population.

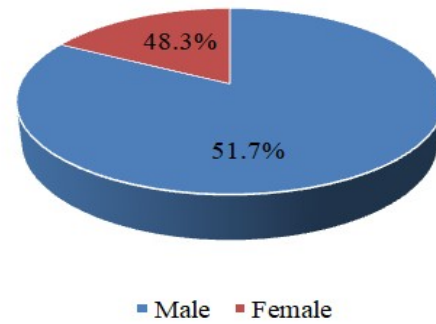


Figure 1. Distribution of patients by gender

In terms of gender, the distribution was highly balanced, with males accounting for 48.3% (n=15) and females 51.7% (n=16) of the study population.

Preoperative clinical findings

Table 2. Preoperative clinical characteristics of the study participants

Clinical Features	n	%
Affected eyes		
One eye (Unilateral)	21	67.7
Both eyes (Bilateral)	10	32.3
Ptosis Severity		
Moderate	14	45.1
Severe	17	54.9
Upper Eyelid Levator Function		
Poor (< 4 mm)	31	100
Clinical Type		
Simple congenital ptosis	28	90.3
Congenital ptosis with narrow palpebral fissure	3	9.7

Unilateral ptosis was the most common presentation, occurring in 67.7% of the patients. All included patients (100%) had poor levator muscle excursion before surgery, and 54.9% suffered from severe ptosis. Simple congenital ptosis was the primary diagnosis (90.3%).

Postoperative functional and aesthetic outcomes

Table 3. Level of ptosis correction over time

Level	1 week		1 month		3 months	
	n	%	n	%	n	%
Good	26	83.9	28	90.3	28	90.3
Moderate	5	6.1	3	9.7	3	9.7
Poor	0	0.0	0	0.0	0	0.0
Total	31	100	31	100	31	100

The rate of good ptosis correction improved over time, rising from 83.9% at 1 week to 90.3% at 1 month, and remained completely stable at 3 months post-operation.

Table 4. Ocular aesthetic outcomes over time

Result	1 week		1 month		3 months	
	n	%	n	%	n	%
Good	26	83.9	28	90.3	28	90.3
Poor	5	6.1	3	9.7	3	9.7
Total	31	100	31	100	31	100

Good aesthetic outcomes (characterised by eyelid symmetry and natural crease formation) were achieved in 83.9% of eyes at 1 week, which increased to 90.3% at 1 and 3 months postoperatively.

Postoperative complications and surgical outcomes

Table 5. Postoperative complications over time

Complication	Time		1 week		1 month		3 months	
	n	%	n	%	n	%	n	%
Transient exposure conjunctivitis	1	3.2	0	0.0	0	0	0	0
Undercorrection	2	6.4	2	6.4	2	6.4	2	6.4
Total	3	9.6	2	6.4	2	6.4	2	6.4

One patient (3.2%) experienced early postoperative exposure conjunctivitis due to lagophthalmos, which was resolved completely with treatment. Under correction was noted in 2 cases (6.4%) and remained stable. There were no cases of wound infection, tissue extrusion, or donor site (thigh) hematoma.

Table 6. Overall surgical success rate over time

Outcome	Time		1 week		1 month		3 months	
	n	%	n	%	n	%	n	%
Good	28	90.3	29	93.5	29	93.5	29	93.5
Satisfactory	3	9.7	2	6.5	2	6.5	2	6.5
Total	31	100	31	100	31	100	31	100

The overall success rate (the combination of good and satisfactory outcomes) was 100% across all follow-up intervals. The proportion of "good" overall surgical outcomes reached 93.5% by month 1 and stayed stable through month 3.

DISCUSSION

The present study evaluated the clinical characteristics and short-term surgical outcomes of frontalis suspension using autogenous fascia lata in 31 patients with congenital ptosis and poor levator muscle function. Most patients were between 3 and 18 years of age (83.9%), with a mean age of 12.3 ± 6.4 years. Male and female patients were almost equally represented, while unilateral ptosis was more common than bilateral disease. These findings are consistent with the general epidemiological characteristics of congenital ptosis reported in previous studies, in which unilateral involvement predominates and the condition shows no obvious sex predilection (Hu, 1987; SooHoo *et al.*, 2014). All patients included in the present study had poor levator muscle function (<4 mm), making frontalis suspension the appropriate surgical procedure (Patipa, 1994; SooHoo *et al.*, 2014).

Our results demonstrated favorable functional outcomes following surgery. The proportion of patients achieving good eyelid correction increased from 83.9% at one week to 90.3% at one month and remained stable at three months. Similarly, the overall surgical success rate reached 93.5% after one month and was maintained throughout the follow-up period. These findings are comparable with those reported by Crawford (1977) and Leibovitch *et al.*, (2003), who described durable eyelid elevation and satisfactory long-term outcomes after frontalis suspension using autogenous fascia lata. The favorable results observed in the present study may be attributed to the good mechanical strength and biocompatibility of autogenous fascia lata, allowing stable suspension while minimizing tissue reaction (Crawford, 1977; Leibovitch *et al.*, 2003).

Good cosmetic outcomes were achieved in 90.3% of patients at both one and three months after surgery. The improvement in eyelid symmetry and crease appearance is consistent with previous reports demonstrating that autogenous fascia lata provides stable eyelid contour and satisfactory cosmetic results over time (Lee & Yoon, 2009; Philandrianos *et al.*, 2010). Compared with synthetic suspension materials, autogenous fascia lata has the advantage of becoming biologically incorporated into surrounding tissues, thereby reducing the likelihood of stretching or late recurrence (Lee & Yoon, 2009).

The incidence of postoperative complications in the present study was low. Only one patient developed transient exposure conjunctivitis, which resolved with conservative treatment, while undercorrection occurred in two patients and remained stable during follow-up. No cases of wound infection, graft extrusion, granuloma formation, or donor-site hematoma were observed. Similar findings have been reported in previous studies, which demonstrated lower complication rates with autogenous fascia lata than with several synthetic suspension materials (Leibovitch *et al.*, 2003; Morris *et al.*, 2008; Garrott *et al.*, 2010). These findings suggest that autogenous fascia lata can be used safely when harvested and implanted using an appropriate surgical technique.

The present study has several limitations. The sample size was relatively small, the follow-up period was limited to three months, and there was no comparison group using other suspension materials. Therefore, long-term comparative studies with larger sample sizes are needed to further evaluate the durability, functional outcomes, cosmetic results, and postoperative complications of frontalis suspension using autogenous fascia lata.

CONCLUSION

In this study, frontalis suspension using autogenous fascia lata was associated with satisfactory short-term functional and aesthetic outcomes and a low rate of postoperative complications in patients with congenital ptosis and poor levator function. Further studies with larger sample sizes, comparative designs, and longer follow-up periods are needed to better evaluate the long-term outcomes of this surgical technique.

ACKNOWLEDGEMENTS

The authors sincerely thank the Board of Directors, the Department of Ophthalmology, and the medical staff of Hue Odonto-Maxillofacial Hospital for their support during patient recruitment, surgical treatment, and data collection. We also express our gratitude to all patients and their families for their participation and cooperation throughout this study.

REFERENCES

- Hu, D. N. (1987). Prevalence and mode of inheritance of major genetic eye diseases in China. *Journal of Medical Genetics*, 24(10), 584–588. <https://doi.org/10.1136/jmg.24.10.584>.
- SooHoo, J. R., Davies, B. W., Allard, F. D., & Durairaj, V. D. (2014). Congenital ptosis. *Survey of Ophthalmology*, 59(5), 483–492. <https://doi.org/10.1016/j.survophthal.2014.01.005>.
- Patipa, M. (1994). Frontalis sling fixation with silicone rods for the treatment of severe blepharoptosis. *Operative Techniques in Plastic and Reconstructive Surgery*, 1(3), 172–180.

4. Crawford, J. S. (1977). Repair of ptosis using frontalis muscle and fascia lata: A 20-year review. *Ophthalmic Surgery*, 8(4), 31–40.
5. Leibovitch, I., Leibovitch, L., & Dray, J. P. (2003). Long-term results of frontalis suspension using autogenous fascia lata for congenital ptosis in children under 3 years of age. *American Journal of Ophthalmology*, 136(5), 866–871. [https://doi.org/10.1016/S0002-9394\(03\)00466-5](https://doi.org/10.1016/S0002-9394(03)00466-5).
6. Lee, J. S., & Yoon, J. S. (2009). Long-term functional and cosmetic outcomes after frontalis suspension using autogenous fascia lata for pediatric congenital ptosis. *Ophthalmology*, 116(7), 1405–1414. <https://doi.org/10.1016/j.ophtha.2009.01.040>.
7. Philandrianos, C., Galinier, P., Salazard, B., Bardot, J., & Magalon, G. (2010). Congenital ptosis: Long-term outcome of frontalis suspension using autogenous temporal fascia or fascia lata in children. *Journal of Plastic, Reconstructive & Aesthetic Surgery*, 63(5), 782–786. <https://doi.org/10.1016/j.bjps.2009.01.083>.
8. Lee, M. J., Oh, J. Y., Choung, H. K., Kim, N. J., Sung, M. S., & Khwarg, S. I. (2009). Frontalis sling operation using silicone rod compared with preserved fascia lata for congenital ptosis: A three-year follow-up study. *Ophthalmology*, 116(1), 123–129. <https://doi.org/10.1016/j.ophtha.2008.08.049>.
9. Morris, C. L., Buckley, E. G., Enyedi, L. B., Stinnett, S., & Freedman, S. E. (2008). Safety and efficacy of silicone rod frontalis suspension surgery for childhood ptosis repair. *Journal of Pediatric Ophthalmology and Strabismus*, 45(5), 280–288.
10. Garrott, H., Aristodemou, P., Sinclair, N., Lane, C., & Harrad, R. (2010). Long-term efficacy of 2-0 Prolene brow suspensions for congenital ptosis. *Eye*, 24(1), 175–177. <https://doi.org/10.1038/eye.2009.242>.
