

Superficial temporal muscle fascia grafting: Successful transplant of surgical induced necrotizing scleritis

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Case report

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Abstract

Background To report the case of a surgical-induced necrotizing scleritis (SINS) following vitreoretinal retinal surgery for rhegmatogenous retinal detachment, successfully managed by superficial muscle temporal fascia grafting. **Case presentation** An 18-year-old teenage, with a history of a twenty-three gauges vitrectomy with silicone oil tamponade for rhegmatogenous retinal detachment of the left eye presented two months after surgery with intense left ocular pain, decreased visual acuity to counting fingers and eye redness. Split lamp exam showed: conjunctival infiltration with silicone oil, circumferential sclera thinning predominantly in the superonasal quadrant with ectasia of the underlying uvea. The fundus examination showed an attached retina. Necrotizing scleritis was the retained diagnosis. Performed etiological assessment was negative. Surgical induced necrotizing scleritis was the final diagnosis. An immunosuppressive therapy based on general corticoids was started. With the immanent risk of globe perforation, superficial muscle temporal fascia grafting was performed to cover the necrotizing sclera. The patient did well postoperatively without sclera thinning or ectasia and the fascia grafting still intact without retraction after six months of follow up. **Conclusion** This is the first case in the literature that used the superficial temporal muscle fascia as a graft for sclera reinforcement in SINS. We propose a new support to reinforce the deficient sclera. This graft must be associated with prompt immunosuppressive therapy at high doses.

Background

Surgical Induced Necrotizing Sclerosis (SINS) is a rare and severe form of scleritis (1). It's a postoperative complication reported after ocular surgery including cataract surgery, trabeculectomy, pterygium's excision, penetrating keratoplasty and pars plana vitrectomy (2,3).

Exact pathogenesis of this disease is not yet fully understood nevertheless most likely theory is the immunological mechanism (3,4).

The immunosuppressive therapy is the most successful and tolerated treatment (2,3,5). However, this therapy especially in extended SINS, can be insufficient to control the progression's process. To the best of our knowledge the present case is the first one in literature reporting SINS management by superficial muscle temporal fascia grafting .

Case Presentation

An 18-year-old teenage, with myopia history, underwent a 23 gauges pars plana vitrectomy with silicone oil tamponade for rhegmatogenous retinal detachment of the left eye. Laser retinopexy of peripheral tears was intraoperatively conducted without cryotherapy. Two months later, the patient has suffered intense left ocular pain, decreased visual acuity and eye redness. Visual acuity was decreased to counting fingers. Split lamp exam showed: conjunctival infiltration with silicone oil, a circumferential scleral thinning, predominant in the superior nasal and ectasia of the underlying uvea (figure 1a). Cornea was transparent, the photomotor reflex was normal with phacosclerosis. Fundus examination showed an attached retina, documented by the echography B.

In front of these signs, a necrotizing scleritis was the first evoked diagnosis. Postoperative infective scleritis was ruled out with negative microbiological assessment of scleral scraping. Blood tests including serologies (syphilis, tuberculosis, herpes, toxoplasmosis), full blood count, erythrocyte sedimentation rate, C-reactive protein, rheumatoid factor, antinuclear antibody and anti-neutrophil cytoplasmic antibody tests were performed.

A general physical examination was also performed. Results were negative for both systemic vasculitis and arthritis. An orbit cerebral magnetic resonance imaging (MRI) was performed eliminating ocular or cerebral tumor.

Considering these findings, SINS was the final diagnosis. An immunosuppressive therapy based on general corticoids (prednisone 1 mg/kg) was started with topical corticosteroids. Owing to impending risk of globe perforation, superficial muscle temporal fascia grafting was performed wrapping the necrotizing sclera (figure 1b,c,d). Oral azathioprine (2.5 mg/kg during the first month) was started postoperatively in addition to corticosteroid with progressive degeneration for both immunosuppressive therapies. The patient did well where the fascia grafting is still intact without retraction or rejection for 6 months (figure 1e).

Surgical technique:

A 360-degree anterior conjunctival dissection was performed. We evacuated the silicone in subconjunctival. Exploration has revealed significant 360-degree scleral thinning, greater supra-nasal without obvious perforation (fig 1a, c). We measured the area of prolapse. Patches of aponeurosis of the superficial temporal muscle were cut and modeled according to the air of scleral prolapsed (fig 1b, d). The different patches had variable surfaces that were larger than the areas of scleral defect (> 1mm minimum). The suture of the patches was

performed as follows: 4 separate cardinal points under tension, with a 10-0 monofilament, then a 360-degree overlock of each patch with a 6-0 vicryl yarn (fig 1d). We ended with a conjunctival closure on 360-degree by separated points by vicryl 7-0.

Discussion

SINS are a severe form of scleritis and a threat to globe integrity (1). It requires prompt and aggressive immunosuppressive therapy after ruling out infectious etiology (1,2).

Many studies involved hypersensitivity response as the major mechanism of triggering SINS. Therefore, their therapeutic approach was based on the here above involvement to treat SINS with immunosuppressive molecules (2,3,4,9). Corticoids with high doses, cyclophosphamide and azathioprin are main immunosuppressive drugs used to control and stop SINS progression (1,2,3,4).

In severe cases, in addition to immunosuppressive therapy, damaged tissue surgical replacement is required. The SINS's surgical management is still challenging. Multiple material grafts have been used for patch grafting: amniotic membrane, pericardium, fascia lata, Gore-Tex (synthetic material) (1,6).

The amniotic membrane is widely used for ocular surface reconstruction, especially in necrotizing scleritis with uveal ectasia. In fact, it's available, non-antigenic and without risk of immunologic rejection. Furthermore, the amniotic membrane has many growth factors, stimulates reepithelialization and reduces fibrosis and inflammation (7,8).

Similarly, the fascia lata grafting shows promising results, especially in extended area of necrosis. H. Kobtan reported a special case of SINS in a traumatic eye with multiple surgical interventions and multiple sclera damage. The fascia lata covered all the necrotizing area and provided the tectonic integrity of the globe (1). The fascia lata is relatively acellular, durable, with no risk of tissue reaction or rejection and without risk of potential disease transmission (1).

To our knowledge, our case is unique in literature: It's the first case in the literature that used the superficial temporal muscle fascia as a graft for sclera reinforcement. We chose this tissue for several reasons: homograft technique, availability, acellular, sustainability, very strong and with large size. It successfully covered the hole ectasia, over 360-degree.

Inclusion of immunosuppressive therapy immediately on postoperative is crucial to avoid rejection and necrosis of the graft (10). In our case, the corticoids were administered, with high doses before the surgery. Azathioprin was immediately prescribed postoperatively in association to corticoids to increase graft survival.

Conclusions

SINS is a rare complication after pars plana vitrectomy with challenging management. Different approaches are proposed to control necrotizing extension and preserve globe integrity. Surgical management and aggressive immunotherapy are usually necessary in order to get successful results. In our case, we offer a new support to reinforce the deficient sclera and reduce the uveal prolapsed: the superficial temporal muscle fascia providing a good tectonic support for the globe. This graft must be associated with prompt immunosuppressive therapy at high doses.

Abbreviations

SINS: surgical induced necrotizing scleritis.

Declarations

Ethics approval and consent to participate

The study adhered to the tenets of the Declaration of Helsinki. It was approved by the local ethics committee and written informed consent was obtained from all participants before they recruited into the study.

Consent for publication

Written informed consent was obtained from the patient for publication of this study and any accompanying images.

Availability of Data and material:

Not applicable. Our manuscript present a case report, there is no data used to develop our case.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

There are no authors' contributions.

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Figures

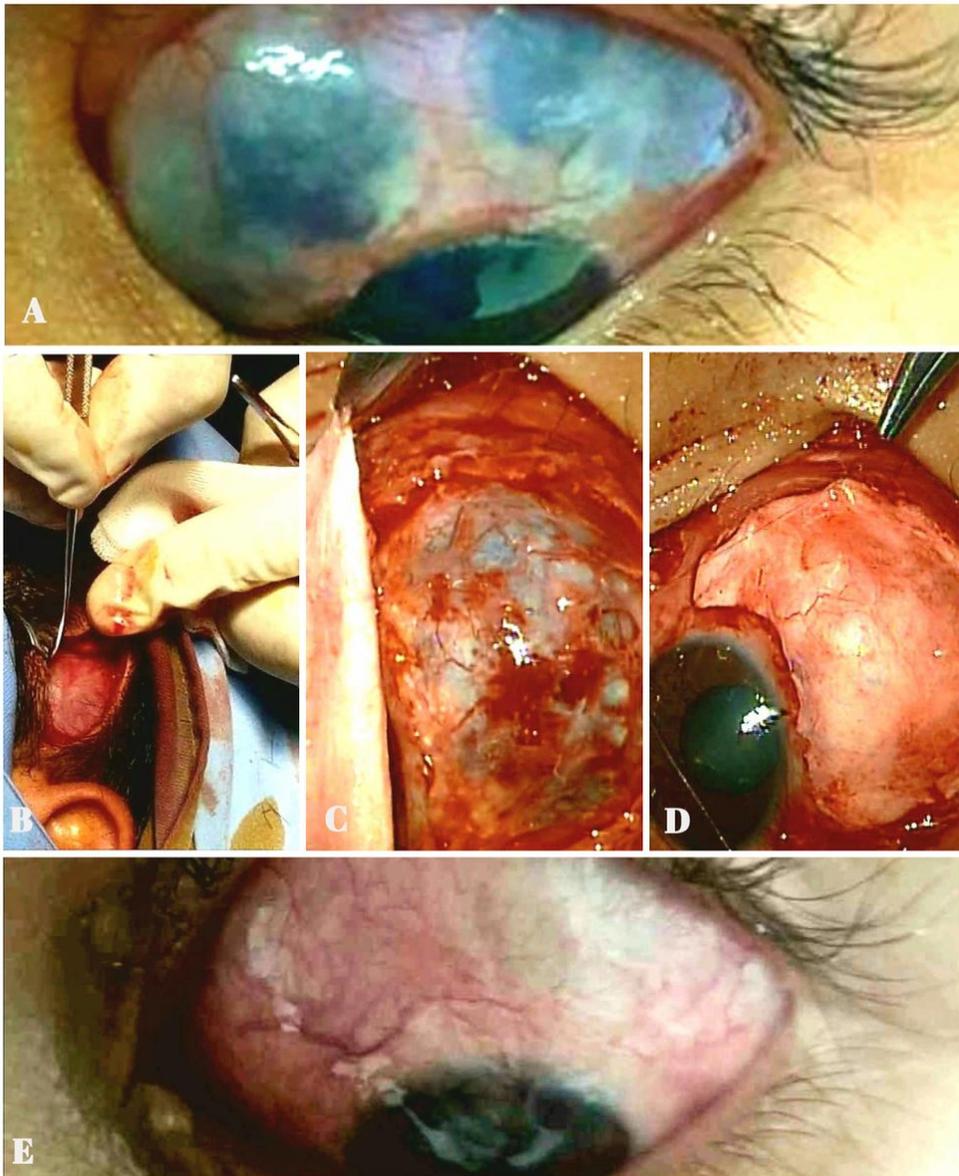


Figure 1

Legend: A: scleral thinning with ectasia of the underlying uvea. B: dissection of aponeurosis of the superficial temporal muscle. C: ectasia of the uvea after conjunctival dissection: there is no sclera perforation. D: the temporal muscle was transplanted over the sclera defect and sutured with interrupted 10-0 nylon sutures. E: 3 months after the transplantation of the aponeurosis of the superficial temporal muscle.

Supplementary Files

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- [checklist1.pdf](#)