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# Bilateral scleral dellen Following strabismus surgery : 2 years follow up



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## ABSTRACT

**Introduction:** Dellen are small saucer-like excavations could happened at cornea and sclera. Scleral dellen result from local dehydration and thinning of the scleral tissues with exposure of the underlying uvea leading to their bluish color. This condition has been reported occurred after a variety of ocular surgical procedures, including strabismus surgery, pterygium excision and cataract extraction. The incidence of scleral dellen has not yet known, but data regarding dellen cornea are estimated at 3.2-4.3% in general strabismus surgery.  
**Objective:** The purpose of making this case report is to study scleral

dellen as apost-operative extraocular muscle complication and its treatment.

**Case Illustration:** Patient, male, 12 years old with intermittent exotropia has performed bilateral lateral rectus recess with adjustable suture. Post operative ocular alignment was orthophoria, but scleral dellen was found in both eyes post surgery. Rheumatoid factor examination and Anti Nuclear Antibody tests were performed to confirm the presence of collagen abnormalities and autoimmune diseases showing normal results. No deterioration until 2 years follow up. Patients were treat conservatively.

**Keyword:** Dellen, Strabismus Surgery, Granuloma

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## INTRODUCTION

The term dellen (delle, singular) refers to localized, shallow depressions at corneal or scleral tissue. Scleral dellen result from local sclera dehydration and thinning of the sclera tissues with exposure of the underlying uvea leading to their bluish color. This condition has been reported occurred after a variety of ocular surgical procedures, including strabismus surgery, pterygium excision and cataract extraction. These occurred when raised abnormal bulbar conjunctiva prevents the eyelid from adequately resurfacing the cornea with tear fluid during blinking. Dellen are more apt to occur when the limbal approach to EOM surgery is used. They usually heal with time. Artificial tears or lubricants may be used until the chemosis subsides (AAO staff, 2016; Accorinti M et al, 2014).

## CASE ILLUSTRATION

Patient, male, 12 years old came with chief complain outward deviation in left eye since he was 3 years old. The deviation are getting frequent for the last year, without history of blurry and double vision. Patient had history medication to ophthalmologist before and given spectacles and doing eye patching. Patient were spontaneous labour and premature,

with history of seizure when controlled by medication.

Ophthalmology examination show deviation manifest spontaneously almost throughout the examination, best corrected visual acuity (BCVA) 6/6 OU, with exotropia 30ΔBI in near and distance prism alternate cover test. Patient was diagnosed with exotropia intermittent poor control (basic type) and had bilateral lateral rectus recess with OD adjustable suture surgery. No cautery procedure was done during the surgery. Conjunctival peritomy were done with limbal approach, rectus muscle were recessed 8mm in both eyes with hangback procedure.

A day after surgery, ocular alignment was orthophoria. Patient allowed to go home with antibiotic and antiinflammation eyedrops. Three week after surgery, BCVA still 6/6 OU, but localized saucer like excavation was found on the right eye, oval in shape, well defined margin, size 3x2x1mm, bluish colour, without tenderness. Left eye examination show round mass, about 2x2x1mm in size, hyperemic, well defined margin, immobile, without tenderness. Posterior examination within normal limit.

Patient was diagnosed with OD scleral dellen and OS granuloma. Patient has given antibiotic

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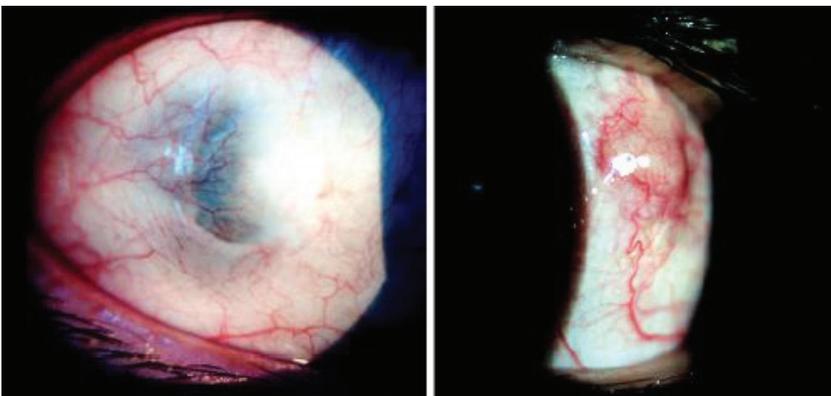
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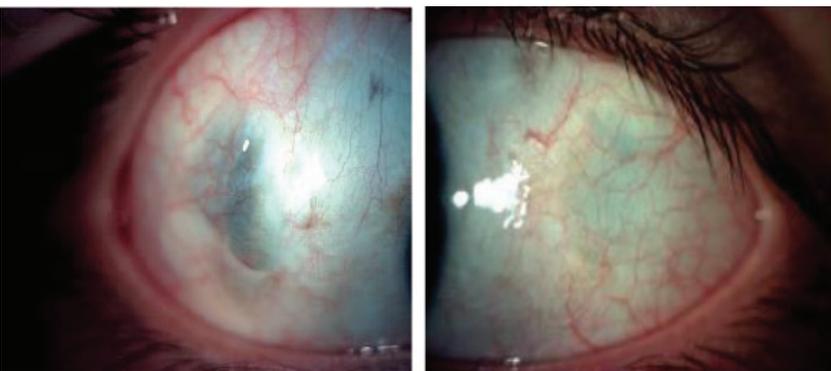
**Figure 1.** Pre operative 9 gaze position



**Figure 2.** A day after post operative result



**Figure 3.** Scleral dellen on right eye, granuloma on left eye



**Figure 4.** Dellen on right and left eye after 2 years follow up

and antiinflammation for left eye with artificial tears for both eyes. Rheumatoid factor examination and Anti Nuclear Antibody tests were performed to confirm the presence of collagen abnormalities and autoimmune diseases showing normal results.

A year after, granuloma fully healed and leave an oval excavation, scleral thinning, 3x2mm in size, bluish colour, without tenderness. Patient was assessed with bilateral scleral dellen post bilateral lateral recess one year follow up. Artificial tears was given on both eyes. Two-years after the surgery both of the dellen were still persistent. There is no resolution neither deterioration. No surgery intervention was indicated.

## DISCUSSION

Scleral dellen is an ocular surface condition that may result from sclera exposure or conjunctival folding, preventing adequate distribution of the tear film in the early post operative period. sclera dellen are rarely noted following strabismus surgery. Conjunctiva removal during the surgery may be risk factor of sclera exposure. Most strabismus surgeon prefer limbal approach for adjustable sututre procedures. A focal exposure of the sclera may occur when a conjunctival limbal procedure are used. Abnormal tear film may also worsening scleral dehydration and necrosis. Topical anesthesia may also contribute to ocular dryness by diminishing tear reflex secretion. Excessive cauterization may also caused focal ischemia and dehydration in eyes with impaired vascular supply (Perez I, 2002)

In this case, cauterization wasn't done during the surgery, but limbal approach could be the cause of sclera exposure or conjunctival folding. This may result defective distribution of artificial tears by surface irregularity. Dellen might also occur on the left eye, but inflammation process may cause granuloma and covered sclera dellen. Close differential diagnoses of scleral ANA test and RF show no sign of collagen and autoimmune disease (Perez I, 2002; Pujari A et al, 2018; Sharma P et al, 1990).

Intense lubrication with artificial tears may sufficient to achieve defect closure. surgery might be indicated if there is any sign of perforation. This case show no resolution neither need of surgery intervention. therefore conservative therapy was continued. (Pujari A et al, 2018)

## CONCLUSION

Dellen are localized, excavation could be happened at cornea or sclera cause by dehydration and irregularity of ocular surface. Intense

lubrication with artificial tears may sufficient to achieve defect closure.

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