

# CONTRACTED SOCKET : MANAGEMENT OPTIONS

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With increasing awareness among patients today, it is important to be able to provide satisfactory cosmesis after trauma and unavoidable, disfiguring eye surgeries Causes of contracted socket.

## 1. Congenital

Conditions such as microphthalmos or congenital anophthalmos usually lead to a contracted socket as the stimulus of the eyeball is essential for healthy growth of the orbit.

## 2. Enucleation without implant

A poorly done enucleation particularly without implant can lead to a contracted socket . This is moreso in children as in the absence of the stimulus of either eyeball or implant, there is a bony contraction as well. The implant needs to be carefully selected, both in terms of size and material.

## 3. Delay in use of conformer

In both enucleation and evisceration procedures, conformer should be fitted immediately. This keeps the fornices stretched and prevents fornicial shallowing. The conformer should be of the adequate size and have multiple holes to allow flusing and drainage of secretions.

## 4. Trauma

Extensive lacerations of the lids and orbital tissue can lead to tissue loss and fibrosis resulting in socket contraction. Injuries with alkali/acid can also cause fibrosis.

## 5. Radiotherapy

Post-operative radiotherapy for

retinoblastoma can cause fibrosis and a grossly contracted socket.

## 6. Infection

Socket / implant infection can lead to sloughing of the conjunctiva and shortening of the fornices Management of contracted socket

Assessment of the socket. While assessing the case some of the points to be kept in mind are :

1. Area of the Socket : The area is assessed particularly by the depth of the fornices. The inferior fornix is the most important as it has to support the prosthesis. The other fornices also need to be adequate to ensure the prosthesis fitting.

2. Volume of the socket : The volume is assessed by noting the relative depth of the socket compared to the fellow eye. The Superior sulcus deformity and presence of ptosis are also indicators of volume loss.

3. Dry / Wet socket : There should be no active discharge from the socket. Dry fibrosed conjunctiva indicates a poorly vascularised socket.

4. Movements : The movements of the muscles are looked for. In case of dermis fat grafting, suturing the muscles to the graft ensures better survival.

5. Eyelid : Eyelid notches and abnormalities need to be looked out for. In longstanding cases there may be stretching and lengthening of the lowerlid which would need to be tackled simultaneously. Eyelid closure needs to be looked for too.

6. Associated bony contraction : In case of injury or post radiotherapy, there may be bony abnormalities/fractures which may need to be tackled.

**Prevention of contracted socket**

Socket contraction should be prevented as far as possible by taking some precautions at the primary surgery.

1. During enucleation the Tenon’s and conjunctiva should be handled with care and sutured separately at the end of the surgery. One should use an implant of adequate size, appropriately wrapped to prevent extrusion.

2. Conformer: A conformer should always be placed at the end of the surgery. This is replaced by the prosthetic eye 4-6 weeks later.

3. Radiotherapy if required, should be used with fractionation of dose

**Surgical correction**

There are various procedures available for socket reconstruction. The surgical decision is based on the amount of socket contraction.

Socket contraction may be graded as follows :

- Mild : Shallowing of fornices, usually the lower fornix
- Moderate : Moderate decrease in area with / without shallow fornices.
- Severe: Loss of area and volume.
- Malignant contracted socket: Loss of area, volume and associated bony contraction.
- Mild Contracted socket : This can usually be managed by deepening the inferior fornix with fornix formation sutures.

**Procedures**

Under local infiltration, 2 or 3 sutures are passed through the inferior fornix and periosteum. They are brought out through the lower lid and passed through a rubber peg to prevent cheese - writing of the skin. A conformer is placed to ensure that the stretch remains. These sutures are removed after 2-3

weeks. Fornix formation sutures can similarly be passed through whichever fornix is shallow

**Moderate contracted socket**

These cases are usually managed with a graft. Grafts that can be used for socket reconstruction include mucosa, split skin and dermis fat grafts. The socket needs to be healthy and vascularised for the grafts to take up .

**Mucous membrane grafts**

Mucosa can be taken from any of the following sites: Buccal cavity (lip or cheek), rectum or vagina. The buccal cavity is preferred as it is easy to access

**Procedures**

The host bed is prepared as follows. The mucosa is incised through the centre and the existing conjunctiva is allowed to retract into the fornix. As far as possible, the graft should be placed in the centre, and the existing conjunctiva should form the fornices. All bands and granulation should be removed.

Fornix formation sutures are then passed, 2 or 3 in the inferior fornix and 1-2 in the superior fornix. The medial and lateral fornices are formed only if shallow. After passing these sutures, the area of the central defect is measured. The mucosal graft needs to be 20-25% more to allow for some shrinkage. The area is measured both horizontally and vertically.

**Retrieval of graft**

The mucosal graft may be taken from the lip or from the cheek.

Lip: The lower lip is everted with a traction suture. The area for the graft is marked out taking care to avoid the frenulum below and to be a couple of mm below the muco-cutaneous junction. The area is then injected with xylocaine with adrenaline which not only facilitates the removal of mucosa but also decreases the bleeding. The graft is removed from below upwards so that the bleedings does not obscure the field. Suturing is not required as the vascular mucosa heals very fast. Pressure dressing may

be given to stop oozing. It is better to avoid too much cautery as this can cause scarring and distortion of the lips.

The fat is then trimmed and the graft is sutured with absorbable sutures (6-0 Vicryl). The fornicial sutures are tightened and the conformer applied Post-operatively the patient is given antibiotic drops and betadine gargles for the donor site

**Severe contracted socket**

These cases usually require both area and volume replacement thus a composite graft is required. The commonly used graft is the dermis fat graft wherein the fat provides the volume and the dermis provides the surface area of the socket.

**Procedure**

Preparation of the host bed is similar as for mucous membrane grafting. Additionally, the extra-ocular muscles are looked for as attachment of the muscles will increase the vascularity and motility of the graft

**Retrieval of dermis fat graft**

Site : The graft is taken from the hip. The site is marked in the centre of a line joining the anterior superior iliac spine and the gluteal tuberosity. The epidermis is scraped off with a

blade till minute bleeding points are seen in the dermis. The graft is taken in a circular or elliptical fashion, 15-20 % more than the area measured out. The depth should be such that the plug of fat is at least 25-30 mm. The donor site is then sutured two types

**Suturing of the graft**

The graft is sutured in the centre of the socket to the mucosal edges. Wherever possible, the muscles are attached. The forniceal sutures are tightened and the conformer applied

**Contracted a vascular socket**

The severely contracted socket needs to be vascularised before any graft can take up. This is especially so in irradiated sockets. The nearby Temporalis muscle and Fascia can be used to increase the vascularity of the socket. The superficial temporal artery supplies the temporalis fascia and this can be brought into the socket through the lateral canthus by forming a pedicle flap. Once the flap takes and the vascularity improves, the fornices can be formed using a mucous membrane graft. After grafting, the conformer is kept for 4-6 weeks till discharge and watering decreases. The conformer is replaced by a prosthetic.

