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Guest Editorial

External Dacryocystorhinostomy: Bleeding, Scar and Success

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External Dacryocystorhinostomy (Ex DCR) is most commonly performed oculoplastic procedure to create patent nasolacrimal apparatus either for blocked nasolacrimal apparatus or functional obstruction.¹ Since Addeo Toti in 1904² described the Ex DCR for the first time, there has been much more modification in the surgical technique by now. Success of Ex DCR varies according to experience, techniques applied and knowledge of good anatomy of lacrimal apparatus and surrounding tissue. Intraoperative bleeding can adversely affect the visualization of surgical area and may lead to poor outcome of surgery. Moreover, one major drawback of Ex DCR is a skin scarring, this can be avoided by performing surgery carefully.

Bleeding is most frequently occurring complication in Ex DCR procedure 5.8% -9.3%.³ Source of bleeding are skin, orbicularis, bone suture line (Sutara Notha), perivascular plexus around the lacrimal sac, infraorbital vessels and nasal mucosal lining. Excessive bleeding can lead to poor visualization of proper anatomy during surgery which can adversely result in failure of surgery. Moreover, continuous bleeding during surgery Preoperative measures to preventing excessive bleeding during surgery would be good control of blood pressure, adequate nasal packing with vasoconstrictor and relaxed mental state of patient. Intraoperatively one can use layer by layer meticulous dissection of tissue and use of cautery as and when required.

Sometimes use of bone wax can help to stop bleeding from bony foramen or suture lines. Angular vessel, perivascular plexus around the sac, artery of Notha, infraorbital vessels and vessels from nasal mucosa needs special attention during surgery and needs urgent coagulation of bleeding vessels. Maxillary bone removal should be minimized so as to clear tear passage otherwise too much osteotomy on the maxillary bone on the inferior orbit can lead to excessive bleeding from infraorbital vessels. Superior osteotomy should be made carefully so as to prevent trauma to anterior ethmoidal vessels and profound bleeding. Similarly, excessive osteotomy towards the nasal tip can leads to more bleeding from nasal mucosa, judicious application of local anesthesia with adrenaline over the nasal mucosa can help to alleviate the pain while making the flap together with cessation of bleeding. Avoid rough instrumentation into the nasal cavity during nasal packing and tube insertion which can lead to nasal mucosal tear and further bleeding. Lastly, good suction machine and cautery is most to have good control of bleeding during Ex DCR.

Surgical site scar is a major drawback of external DCR 9% to 33%,^{4,5} however if surgeon pay adequate attention to the following tips one can avoid significant skin scarring. Incision site, meticulous tissue handling and proper closure of skin can reduce the chance of skin scarring. Site of skin incision should be placed in such a way that it should not cross above the medial canthal tendon. Single time incision without incision raggedness can provide better cosmetic results. One can place a tear trough or sub ciliary incision

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to mask the scar effect. One should not use cautery over the skin and should be careful while using to stop bleeding from inner surface of the incision so as to avoid skin burn otherwise this may end up with ugly scar in future. Skin closure should be done with caution not to bury the skin edges into the incision rather hip up incision margins can reduce the skin scarring. Nevertheless, orbicularis muscle should not be suture within the incision line rather it should be sutured separately as a subcutaneous layer.

Success of Ex DCR reported in the literature range from 71 – 92%.⁶⁻⁹ Success of the surgery should be defined as subjective reporting of patient as no watering together with patent nasolacrimal apparatus on syringing on follow up. Success of surgery mainly depends upon level of obstruction, adequate/placement of osteotomy and lacrimal – nasal mucosa flap preparation. Patient with canalicular obstruction have poor surgical outcome due to tendency of reclosure of canaliculi thus required silastic tubing for prolong period with the aim to maintain normal canalization of canaliculi. Site and size of osteotomy has to be placed in proper place to prevent failure of the surgery, site of the osteotomy has to be made large enough so that fundus of the lacrimal sac in superior osteotomy site and neck of the lacrimal sac is visible. Moreover, bone posterior to the adjoining lacrimal sac especially close to fundus of the sac should be removed completely (Ethmoid and frontal bone) so as to allow free passage of tear flow as common canaliculi opens near the fundus (2.5mm below the fundus of the lacrimal sac). Similarly, ethmoid bone close to nasal mucosa has to be removed, so as to create better posterior nasal mucosal flap. I personally recommended both flap suturing for free passage of tear from common canaliculi to nasal cavity. There should not be any remnant of lacrimal sac cavity after flap anastomosis with nasal mucosa. Osteotomy size should be adequate enough to exposure surgical site so as to prepare and suture the nasal and lacrimal flap. Proper site and size of the osteotomy will provide ample room for visualization of surgical site, preparation, apposition and suturing the flap to each other. On top of this tube insertion would be more convenient if the site and size of the osteotomy is adequate. Lacrimal sac should be opened from fundus to neck so as to open the whole sac rather than part of it, after the lacrimal sac is prepared into anterior and posterior half one should titrate the size of anterior and posterior flap of nasal mucosa. If the anterior flap of the lacrimal sac is smaller then longer nasal mucosal flap is prepared to have better apposition of the flaps and vice versa.

The indication of silastic tubing however in normal Ex DCR is not to maintain the patency. During Ex DCR procedure or in first one week after the surgery, there is high chance that patient may develop some amount of bleeding which can flow back to the canaliculus and thus can leads to fibrosis and failure of the surgery, so to prevent the retrograde blood flow to canaliculi and occupy the

canaliculi, it is advisable to place a silastic tube in routine Ex DCR.

Proper pre-operative evaluation and nasal packing, good knowledge on vessels anatomy and use of cautery, meticulous dissection, adequate and proper placement of osteotomy, good lacrimal – nasal mucosal flap and proper closure of tissue in layer during the Ex DCR procedure can significantly reduce the bleeding and scarring, also improve the success among patient with epiphora.

Conflict of Interest

None.

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