For more than three decades the term trabeculectomy has encompassed a breadth of different techniques, each with advantages and disadvantages as well as modifications that include the implantation of the Ex-PRESS filtration device. Through its evolution limbal-based conjunctival flaps have appeared to reduce wound leak incidence to the lowest levels seen to date. One central issue raised in regard to our technique described below is the selection and availability of the ideal needle and suture combination. Wise suggested the VAS 100-4 (Ethicon) that is readily available on 9-0 nylon. This needle has a very fine micro-cutting tip and a very slender shaft allowing for easy entry into, and steerage through corneo-scleral tissue while minimizing the perforation size of the conjunctival passes. I have used this same needle on 9-0 monofilament Vicryl (Ethicon) as a special order item (Model D-8760). This needle and suture combination. Wise's suture pattern of alternating crimping with stretching of the conjunctival edge can provide robust water-tight wound closure. Wise's suture pattern of alternating crimping with stretching of the conjunctival edge can provide robust water-tight wound closure. Wise's suture pattern of alternating crimping with stretching of the conjunctival edge can provide robust water-tight wound closure. Wise's suture pattern of alternating crimping with stretching of the conjunctival edge can provide robust water-tight wound closure. Wise's suture pattern of alternating crimping with stretching of the conjunctival edge can provide robust water-tight wound closure. Wise's suture pattern of alternating crimping with stretching of the conjunctival edge can provide robust water-tight wound closure. Wise's suture pattern of alternating crimping with stretching of the conjunctival edge can provide robust water-tight wound closure.

A central element is Wise's suturing pattern whereby all the suture bites are LONGER than the space between any suture bites (Figure 1). The suturing starts with a solid bite incorporating sclera and conjunctiva just to the right of the extent of the conjunctival opening near the limbus (right-handed surgeon). It is anchored by tying it to itself. The next pass is down through the edge of the conjunctival flap about 3mm from the right corner of the incision (Figure 2). The needle is then placed to the far right of the incision opening and a long 3-4mm pass is made tangentially through cornea-sclera along the limbus underneath the small lip of anterior conjunctiva and as far anteriorly as possible. Note the anterior lip is NOT incorporated in any of the needle passes (Figure 3). After exiting cornea-sclera the needle is passed up through the conjunctival flap edge about 2mm from the first downward pass. Another downward conjunctival pass is then made 3-4mm further left and that is followed by a

Core concepts
- Fornix-based trabeculectomy flaps appear provide more favorable bleb morphology
- Minimizing early wound leaks is paramount for surgical success but represents one of our greatest challenges
- Wise's suture pattern of alternating crimping with stretching of the conjunctival edge can provide robust water-tight wound closure
- A modification of Wise's technique that retains a narrow lip of anterior limbal conjunctiva as a bolster appears to reduce wound leak incidence to the lowest levels seen to date
- Selecting a narrow profile needle with a micro-point cutting tip is critical in facilitating the technique
- Mastering this technique will reduce early postoperative complications and improve patient outcomes

Fig 1. The principle of the Wise technique is creating suture bites (A) that are longer than the space between bites (B).

Fig 2. After the suture is anchored in conjunctiva and sclera, the next pass is down through the edge of the conjunctival flap, 3.0 mm past the edge of the incision.

Fig 3. The corneoscleral bites are made beneath the anterior conjunctival lip without incorporating any part of the lip.
The pattern is repeated as needed until the needle exits the left end of the incision up through the conjunctiva beyond the confines of the incision. A final pass is made generously incorporating the redundant corner of conjunctiva and underlying sclera leaving a loop of suture so it can be tied to itself after carefully tightening the entire suture line. It is critical that the whole flap be tightly applied to the cornea-sclera under the anterior conjunctival lip. As long as the Wise suture bite architecture and length relationships are maintained, a secure closure is created with the edge of the conjunctival flap buttressed up against the small lip of limbal conjunctiva producing a tightly ‘pursed-lips’ appearance along the limbus (Figure 6). The anterior lip acts as a bolster creating robust watertight closure reducing the tendency for early leakage and helps promote rapid epithelialization at the wound. It is also important to keep any Tenon’s capsule attached to the undersurface of the conjunctiva and perform posterior sub-Tenon’s blunt dissection to enhance effective wound closure and more posterior flow.

In our retrospective review of 509 consecutive cases using this approach we found a 2.9% leak rate in the first postoperative month with a 1.6% rate of return to the operating room to resuture a persistent leak. This is dramatically lower than other reported techniques including ones following Wise’s original description. When meticulously performed this modified closure technique may well provide watertight closure as commonly as limbal-based techniques while producing more favorable long-term bleb morphology (Figure 7 and Figure 8).

Related Video: https://eyetube.net/video/closing-the-fornix-based-conjunctival-flap/

References