SURGICAL OUTCOMES OF DESCemet’s STRIPPING AUTOMATED ENDOThelial KERATOPlASTY (DSAEK) IN PATIENT WITH PRE-EXISTING GLAUCOma DRAINAGE DEVICE SURGERY

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BACKGROUND: The efficacies of both Descemet Stripping Automated Endothelial Keratoplasty (DSAEK) grafting and glaucoma drainage devices (GDD) have been well established. However, the success of a DSAEK graft in the presence of a GDD has not. A DSAEK graft in the presence of a GDD is at risk of failure because of mechanical rubbing of the GDD tube as well as the possibility of a "nutrient-stealing" mechanism whereby nutrient-rich aqueous is drained away before reaching the corneal graft. There is currently no literature on graft success, in this respect, for longer than a 6 month follow up. We collected reliable long-term follow-up data encompassing a period beyond 1 year post-operation.

PURPOSE: To examine the surgical outcomes following DSAEK in patients with prior glaucoma drainage device implantation at 1 year follow up. Outcome criteria include graft dislocation rate, graft survival, average endothelial cell loss and Ahmed valve failure rate.

RESULTS: 17 patients with prior GDD placement met our study inclusion criteria. The post-op endothelial cell count was measured in 8 of these patients. The average pre-op graft endothelial cell count was 3063 (2702-4000). The average 7 ± 5 months post-op endothelial cell count was 2295 (1643-2635). Average endothelial cell loss was 768.25 (173-1490) which is 22.5% ± 16.5. In our study there was a 12% (2) incidence of primary graft failure rate, with one patient's graft having dislocating 3 times (day 71) and the other without a dislocation (day 33). There was a 24% graft dislocation rate. One of these patients had 2 GDDs in place (day 14), and two patients had more than 2 dislocations (days 1 & 14; days 8, 15, & 43). GDD function was maintained in 100% of these eyes. Only one eye required an addition of 1 glaucoma drop to their regimen. No pupillary block occurred in any case.

DISCUSSION: DSAEK surgery in eyes with previous GDD surgery poses several challenges. First, there is the possibility of higher graft dislocation because of escape of the air bubble via the tube. The 24% dislocation rate in our study is no different from the 3-25% dislocation rate described literature in non-glaucoma patients. Both cases occurred during the early learning curve. Our present technique is to inject BSS to fill the bleb first followed by air. Following this technique, we did not have any further dislocations.

The two patients that had primary graft failure in our study may or may not be related to the presence of GDD. We propose two theories as to why a GDD would put one at risk for primary graft failure. One is a mechanism of mechanical rubbing of the GDD tube against the graft. The second is a "nutrient-stealing" mechanism, whereby nutrient-rich aqueous is drained away before reaching the corneal graft. Despite these possibilities, our graft failure rate falls within the average DSAEK failure rate without a GDD present, so there may not be any relationship between the two.

CONCLUSIONS: DSAEK surgery is safe to perform in the presence of a GDD. Endothelial cell loss and graft failure rate in our study was within the normal reported range of DSAEK without prior GDD placement. The rate of graft dislocation may be higher in patients with prior GDD. Intraocular pressure can be well controlled by the GDD post-op. Further studies are required to confirm these findings.