Purpose: To report serial cases of patients who experienced tube erosions with scleral melting after Ahmed valve implantation using a synthetic dural substitute. Methods: We reviewed the medical records about patients who received Ahmed valve implantation with a partial thickness scleral tunnel using a synthetic dural substitute as a subconjunctival patch graft. Results: Tube erosion was caused by dissolution of the conjunctiva and partial-thickness scleral tunnel in 5 patients who received Ahmed valve implantation with a partial thickness scleral tunnel using a synthetic dural substitute as a subconjunctival patch graft for glaucoma treatment 2 to 4 months after the operation. Furthermore, the patients required re-operation for preventing secondary complications such as endophthalmitis. Conclusions: This case series using a synthetic dura substitute as a subconjunctival patch graft in Ahmed valve implantation demonstrated the risk of tube erosion with scleral tunnel melting and following secondary complications even with a partial-thickness sceral tunnel method. Financial Disclosure: No