Introduction

Conjunctival autograft transplantation is a form of ocular surface transplantation in which an autologous free conjunctival graft is obtained from the superior bulbar conjunctiva and sutured to the scleral bed (Figure 15.1). Conjunctival autografting is now extensively employed in pterygium surgery, in which the conjunctival graft is most often obtained from the same eye, but may be obtained from the opposite eye if previous surgery or scarring is present in the affected eye. This procedure is considered by many to set the standard in the surgical treatment of pterygium today, since the procedure can provide excellent cosmesis, is safe, and has been reported to have a low rate of recurrence. However, poor surgical technique resulting from a lack of understanding of basic surgical principles may result in a poor outcome and higher rates of recurrence. This chapter outlines the history and development of conjunctival autograft transplantation and the important surgical principles that allow for consistently successful surgery.

History and Development of Conjunctival Autograft Transplantation

In 1977, Thoft described the procedure of conjunctival transplantation which is now recognized as the forerunner of modern ocular surface transplantation surgery. Although the importance of the limbus as the source of limbal stem cells for repopulation of corneal surface epithelium has now resulted in various forms of limbal transplantation, conjunctival transplantation is still commonly performed in pterygium surgery, in which the procedure is termed conjunctival autografting. The use of a free conjunctival autograft to cover a bare scleral defect after pterygium excision was first described in 1931 by Gómez-Márquez, who utilized superior bulbar conjunctiva from the contralateral eye. However, it was Kenyon who in 1985 proposed the current conjunctival autograft transplantation technique for advanced and recurrent pterygium which is now considered to be the gold standard procedure. Today, the basic surgical techniques of conjunctival autografting may also be applicable to a range of other conjunctival disorders including traumatic or chemically induced symblepharon with conjunctival cicatrization and fornical shortening and for wide excision of potentially premalignant conjunctival lesions.

In 1985, Kenyon originally suggested that conjunctival autografting could be reserved for advanced or recurrent pterygium, since it is more time-consuming and technically difficult compared to simple excision or the use of excision combined with adjunctive therapy such as mitomycin C or beta-irradiation. However, conjunctival autograft has been widely accepted as the procedure of choice for primary pterygium due to (1) the excellent cosmesis and low recurrence rate that can be achieved if correct surgical principles are adhered to (Figure 15.2), (2) the realization that simple excision results in unacceptably high rates of recurrence, and (3) the recognition of infrequent, but potentially sight-threatening, long-term complications reported with mitomycin C and beta-irradiation therapies.

Efficacy of Conjunctival Autografting

We previously performed a randomized controlled trial in Singapore comparing conjunctival autografting with bare sclera excision for primary and recurrent pterygium. Our results demonstrated that conjunctival autografting could achieve a low recurrence rate (2%) in a tropical population in which the bare-sclera recurrence rate was 61% for primary pterygium, and 82% for recurrent pterygium (Figure 15.3). However, this was a single surgeon efficacy trial, and analysis of conjunctival autografting among 23 surgeons in the same institution revealed a wide variation in recurrence rates ranging from 5% to 83%. In addition, there was a clear trend correlating prior surgical experience and recurrence rate, with surgeons who had performed fewer au-
Other published studies on conjunctival autografting report varying recurrence rates from 2% to 39%. This range of recurrence rates compares favorably with bare sclera excision and mitomycin C application (0% to 38%), while recurrence rates reported for simple bare-sclera excision are considerably higher (24% to 89%). It is likely that differing surgical technique may account for the wide range of recurrences reported in pterygium surgery, while inconsistency in defining recurrence and varying periods of follow-up remain additional factors to consider when comparing these studies. Sánchez-Thorin and co-workers performed meta-analysis comparing bare-sclera resection with and without mitomycin C, and conjunctival autograft for primary pterygium. They demonstrated that the odds for recurrence are 6 and 25 times higher if no autograft is performed or if mitomycin C is not used, but acknowledged study limitations imposed by the relative paucity of randomized controlled trials in the pterygium literature and the possibility of publication bias. The potential of conjunctival autografting as the superior procedure of choice is demonstrated in Figure 15.4, in which recurrence of a pterygium occurred after lamellar keratoplasty had been performed. Prior to lamellar keratoplasty, 2 previous surgeries had been attempted: bare-sclera excision and conjunctival autografting with an inadequate surgical technique (a thick, small graft that retracted after surgery). Initial success was achieved with lamellar keratoplasty (Figure 15.4A), but aggressive recurrence over the graft area occurred within 4 months of surgery (Figure 15.4B). A repeat conjunctival autograft utilizing the appropriate surgi-