Conjunctival scarring

Aetiology	All conjunctival scarring is, by definition, 'cicatricial'; but the term 'cicatrising conjunctivitis' is generally reserved for scarring in which there is significant tissue shrinkage, usually with distortion of the fornices and/or the lids Many conditions can cause conjunctival scarring Can be focal, multifocal or diffuse Severity ranges from trivial to sight threatening Many potential causes: • Trauma - surgery - thermal, radiation, mechanical, chemical • Autoimmune - Ocular Cicatricial Pemphigoid (OCP) - Stevens-Johnson syndrome (erythema multiforme major) - Graft versus Host disease • Infection (N.B. very few forms of infective conjunctivitis cause scarring) - trachoma (infection by *Chlamydia trachomatis* [serotypes A-C]) • Allergy - Vernal Keratoconjunctivitis (see Clinical Management Guideline) - Atopic Keratoconjunctivitis (see Clinical Management Guideline) • Ligneous conjunctivitis Secondary effects of conjunctival scarring, often in combination, leading to dry eye with corneal keratinisation and opacification in severe cases: • reduced tear constituents • disturbance of lid function (poor tear spreading)
Predisposing factors	OCP is primarily a disease of the elderly Stevens-Johnson syndrome usually occurs in previously healthy young adults • hypersensitivity reaction precipitated by many different antigens including - bacteria, viruses, fungi, drugs Trachoma: a disease of under-privilege and compromised hygiene • globally, a major cause of blindness Atopic keratoconjunctivitis typically affects young atopic adults
Symptoms	Symptoms depend on severity and type of scarring Reduced tear components and compromised lid function both lead to dry eye • grittiness, burning, foreign body sensation • blurred vision in severe cases
Signs	Depends on aetiology Surgical and traumatic scarring • focal, linear or diffuse scarring according to cause OCP produces sequence of conjunctival changes • bilateral (often asymmetrical) • diffuse conjunctival hyperaemia, papillae • bullae leading to ulceration and pseudomembranes • subepithelial fibrosis and shrinkage • secondary corneal changes

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	Stevens-Johnson syndrome produces sequence of conjunctival changes • acute bilateral mucopurulent conjunctivitis • fibrosis and keratinisation follow acute phase • secondary corneal changes due to tear deficiency, exposure, contact with keratin at lid margin Vernal keratoconjunctivitis • tarsal sub-conjunctival fibrosis • pannus (especially at upper limbus) Atopic keratoconjunctivitis • tarsal sub-conjunctival fibrosis • conjunctival shrinkage • forniceal shortening Trachoma • follicles (upper tarsus) • pannus (especially at upper limbus) • conjunctival inflammation leading to scarring and trichiasis - Von Arlt's line (horizontal line of scarring parallel to lid margin) • Herbert's pits (depressions at the upper limbus representing resolved limbal follicles) • secondary corneal changes
Differential diagnosis	A comprehensive ophthalmic and medical history should reveal the cause If no apparent cause, rule out early stages of OCP
Management by Optometrist	
Practitioners should recognise their limitations and where necessary seek further advice or refer the patient elsewhere	
Non pharmacological	Check for signs of dry eye • reduced tear meniscus • low tear break up time • fluorescein (drops or diagnostic strips) for cornea • Lissamine Green (diagnostic strips) for conjunctiva - alternatively, Rose Bengal (diagnostic strips) for conjunctiva Check for signs of mechanical trauma to cornea due to: • trichiasis, keratinised tarsal conjunctiva Taping to reduce entropion (temporary measure) Taping lids together at night in lagophthalmos Therapeutic contact lens. All types of lens have been used. When the eye is relatively dry the first choice may be a scleral lens: • to prevent desiccation • to prevent trauma from keratinised lids • to promote healing of epithelial defects
Pharmacological	Ocular lubricants for tear deficiency/instability related symptoms (drops for use during the day, unmedicated ointment for use at bedtime) *NB Patients on long-term medication may develop sensitivity reactions which may be to active ingredients or to preservative systems (see Clinical Management Guideline on Conjunctivitis Medicamentosa). They should be switched to unpreserved preparations*
Management Category	Mild scarring resulting from minor trauma or surgery: **B2**: alleviation / palliation: normally no referral Moderate to severe scarring:

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	B1: initial management (including drugs) followed by routine referral Any conjunctival scarring of unknown aetiology should be referred. Conjunctival cicatrisation can be sight threatening
Possible management by Ophthalmologist	
	Conjunctival or buccal mucus membrane grafts, stem cell transplantation, amniotic membrane transplantation, lid surgery (but surgery in OCP can stimulate inflammation and produce further scarring)
Evidence base	
	Saw VP, Minassian D, Dart JK, Ramsay A, Henderson H, Poniatowski S, Warwick RM, Cabral S. Amniotic membrane transplantation for ocular disease: a review of the first 233 cases from the UK user group. Br J Ophthalmol 2004;91:1042-7 (The Oxford 2011 Levels of Evidence = 4)

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