

# Final Assessment of Trichiasis Surgeons

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## Contents

1. Background .....	4
2. Objectives .....	4
3. Using this manual.....	4
4. Trainees.....	5
5. Qualifications for certification .....	5
6. Knowledge and procedures to be assessed .....	5
_6.1 Before surgery.....	5
_6.2 Sterilization of equipment before use .....	6
_6.3 Examination of the patient .....	6
_6.4 Preoperative preparation .....	7
_6.5 Injecting anesthetic .....	8
_6.6 Operation.....	8
_6.7 Suturing.....	9
_6.8 Tying sutures.....	9
_6.9 Postoperative care .....	10
7. Use of the checklist.....	10
Appendix 1. Trabut method .....	13
Appendix 2. Cuenod Nataf.....	17

## 1. Background

In a clinical trial, bilamellar tarsal rotation (BLTR) surgery for trichomatous trichiasis (TT) has been shown to be more successful than other procedures in correcting inturned lashes for up to two years post-surgery (1). It has also been shown that non-ophthalmologists can successfully perform the surgery at the local level, with good outcomes (2). This and similar procedures (see Appendices 1 and 2), are now the surgeries of choice for the SAFE<sup>1</sup> strategy in trachoma control.

The WHO simplified grading scheme for trichiasis designates the presence of one lash touching the globe as the sign of TT. There is some disagreement among countries regarding the indication for surgery: some countries prefer to wait until lashes touch the cornea, or more than a few lashes touch the globe, before recommending surgery.

An earlier WHO manual, *Trichiasis surgery for trachoma: the bilamellar tarsal rotation procedure*, describes the surgery, the preferred background of the individuals who can be trained to perform the procedure, and postoperative care (3). The present manual sets out guidelines for use by an experienced trichiasis surgeon, preferably an ophthalmologist with some theoretical background, to certify non-ophthalmic surgeons as competent to perform the BLTR procedure on their own.

## 2. Objectives

The objectives of this manual are to:

- list and describe the knowledge that must be demonstrated and the procedures that must be successfully completed before, during, and after, surgery in order for certification to be granted;
- provide a checklist of the knowledge and procedures to assess during observation of the surgical process;
- provide guidelines for scoring the checklist for purposes of certification.

## 3. Using this manual

The examiner should begin by talking to the person who trained the trainees. In order to understand what the trainees have been taught, the examiner should discuss and review with the trainer the standard manual used for training, and observe the trainer performing two operations. It may be, for example, that the trainees were not taught the rationale behind placement of the haemostats, and it would be unfair to test them on information they were not given. Understanding the material used by the trainer is key to the certification process. In addition, local practice must be taken into consideration. For example, while the use of loupes is highly recommended in the certification process, especially for older surgeons, it is not a requirement of this or the earlier manual (3). The examiner can use knowledge of local practices to provide additional information or knowledge of procedures to the trainees during their first surgery.

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<sup>1</sup> Surgery for trichiasis, Antibiotics, Facial cleanliness and Environmental improvement.

For certification, the examiner should observe each trainee carrying out five BLTR procedures, i.e. surgery on five lids, with a mixture of right and left eyes. The first is the practice operation, during which the examiner can talk with the trainee, put him or her at ease, and provide additional information or demonstrate skills that the trainer may have omitted. The trainee must undertake the subsequent four procedures alone, without comment or intervention by the examiner (unless such intervention becomes necessary for the welfare of the patient).

## **4. Trainees**

As stated in the earlier manual on the BLTR procedure (3), trainees must have prior surgical experience, knowledge of sterile techniques, and experience both in giving injections and in eye examinations. Selection criteria may also include basic clinical training at a recognized institution. The trainees must have completed training in trichiasis surgery in a course of accepted minimum depth and practical content (depending on national policy). Programmes should have established the minimum number of operations to be performed under supervision before trainees can be sent for certification.

## **5. Qualifications for certification**

In order to become certified in the BLTR surgical procedure, the trainee must have accomplished the following:

- successfully completed a course on the procedure and received a recommendation for certification from the instructor;
- successfully performed five sequential trichiasis operations under observation by the certification examiner, defined as no more than 10 unsatisfactory marks on the checklist and none in the critical areas (those marked with an asterisk or star, \*).

## **6. Knowledge and procedures to be assessed**

This section focuses on the BLTR surgery: alternative procedures are described in Appendices 1 and 2. It includes a detailed description of each item on the checklist, and comprehensive guidelines for assessing the trainee. The knowledge base can be assessed at the time of the first operation, and need not be repeated for successive operations unless the examiner deems it necessary. All other assessments must be made at every operation. The items marked with an asterisk or star (\*) are critical and must be correctly performed in every case if the trainee is to achieve certification.

### **6.1 Before surgery**

1. *Assembly of materials before surgery.* The trainee should demonstrate assembly of the necessary materials and consumables, preparing and setting them up on a table before surgery. Such materials include the following, and others as locally appropriate:

Operating loupes

Scalpel holder for blades  
Correct blade  
Needle holder  
Correct forceps  
2 haemostats (if used)  
Scissors  
Correct needles  
Correct suture material (suture and needles may be combined)  
Syringe  
Needles  
Topical anaesthetic  
Anaesthetic for injection  
Skin preparation solution (e.g. povidine iodine)  
1% TTC eye ointment or other postoperative antibiotic  
Surgical gloves  
Sterile gauze  
Sterile drape/inner paper containing the sterile gloves  
Kidney dish (or similar tray)  
Galley pot  
Lid guard (if used)

2. *Knowledge of surgical material.* The trainee should be able to identify each instrument or material and know what it is used for and why it is needed.

## **6.2 Sterilization of equipment before use**

1. \* *Knowledge of sterile techniques.* The examiner must ask questions on the definition of sterile, why sterility is necessary, details of techniques for achieving sterility, and alternatives to use in the local setting if the usual technique is not available. For example, if the health centre is using an autoclave, the trainee must be able describe the use of the autoclave, the washing and cleaning of instruments before insertion, loading of the autoclave, the duration of autoclaving after a temperature of 121 °C is reached, and what to do if the autoclave is not working (e.g. boil the instruments).
2. \* *Appropriate sterilization of all non-disposable instruments.* The examiner should observe performance of the sterilization procedure and note whether sterility is achieved. This step can be combined with preparation above.
3. \* *Maintenance of sterility of disposable items.* The examiner should observe the use of sterile forceps to handle materials in order to maintain sterility.

## **6.3 Examination of the patient**

1. *Interacting with the patient.* The examiner should observe the trainee interacting appropriately with the patient and obtaining informed consent for the surgery (if this has not yet been done). Locally appropriate customs for greeting should be observed before any examination is started or the patient is touched.

2. *Using a bright torch to examine the patient.* Use of a bright light ensures that trichiasis is not missed. It is not easy to see a black lash touching the globe against a black pupil, and a bright light is essential.
3. *Looking at the lid from below to see whether there is trichiasis.* The correct position must be used when assessing trichiasis. The patient should be in primary position (head level, with eyes looking straight ahead) and the examiner should be below the gaze to determine whether trichiasis is present.
4. *\* Correctly identifying trichiasis.* The examiner must certify that the trainee has correctly identified trichiasis, even if the condition is not so severe as to warrant surgery in the local setting.
5. *\* Determining whether there is defective lid closure.* The examiner must observe the trainee using proper examination technique and what would be done with the patient if a lid closure defect were found. In many settings, such patients must be referred to an ophthalmologist for appropriate surgery.
6. *Obtaining a relevant medical history from the patient, according to local practice.* The trainee must confirm that the patient will be able to tolerate surgery; this should include ascertaining that the patient can lie flat on his or her back for 30 minutes, and whether the patient has other relevant problems, such as a blood disorder that may result in excessive bleeding, any condition that necessitates daily medication (ascertain what condition and what medication is being taken), shortness of breath, or heart problems.
7. *\* Correct classification of the patient as a surgical patient for the trainee.* The patient should have no other ocular condition that would complicate the surgery, such as lid closure defect or grossly infected eyelid, and must be fit to undergo surgery at the community level, under local anaesthesia.

#### **6.4 Preoperative preparation**

1. *Explaining to the patient.* The trainee explains to the patient what is going to happen. The examiner should hear the trainee clearly state both the problem (e.g. eyelashes turning in) and the solution (corrective surgery). The initial steps, such as injection of the local anaesthetic, should also be explained (e.g. the injection will cause some slight stinging, but the patient should feel no pain). If the examiner does not speak the local language, this must be checked by the trainer.
2. *Use of loupes.* The trainee should put on operating loupes. This may not be usual practice in some settings but is highly recommended.
3. *Administration of anaesthetic.* The trainee administers the topical anaesthetic. The examiner should observe proper placement of the anaesthetic in the lower fornix, while the patient is looking up.
4. *Washing hands appropriately.* The trainee should demonstrate proper surgical scrub technique, and the examiner will observe the duration and thoroughness of the scrub. The trainee should brush with soap and running water, and the sequence of brushing and use of disinfectant should be observed to ensure maximum aseptic conditions.

5. \* *Use of sterile gloves to maintain sterility.* The examiner should observe the trainee putting on surgical gloves and note whether his or her fingers, hands, or arms touch any part of the gloves that they should not touch.
6. \* *Preparing patient's face and eyelids.* The examiner must observe the use of appropriate disinfectant, with care being taken to avoid too much entering the patient's eyes. The technique of cleaning, a centrifugal pattern from the proximal side of the eyelid to the face, must be observed. If the trainee must return to clean the eyelid again, fresh gauze must be used to prevent any contaminant from the face being transferred to the eyelid area.

## **6.5    *Injecting anaesthetic***

1. *Maintaining sterility of the anaesthetic.* The examiner observes that sterile techniques are used to draw up the anaesthetic and, if the bottle is multi-dose, that sterility is maintained after the required amount has been drawn.
2. *Drawing up correct amount.* No more than 5 ml of lidocaine per eyelid is needed, and the trainee should understand why this limit is important.
3. \* *Re-checking that the correct lid is receiving the anaesthetic.* This step is absolutely essential in a patient with a unilateral condition: with the surgeon at the head of the table, the affected lid will be on the opposite side relative to the original examination. If the trainee is in error, the examiner should halt the procedure and note performance as unsatisfactory.
4. \* *Proper introduction of needle.* The examiner must observe the proper procedure, with the needle being introduced temporal from the lateral canthus and 3 mm above the lid margin. The technique is described in the WHO manual (3). Insertion should be in the plane of the upper lid, with care being taken to avoid poking the needle out through the eyelid or piercing the eyeball. Either adverse event must be immediately noted as unsatisfactory performance.
5. \* *Proper injection of the anaesthetic.* The technique described in the WHO manual (3) for injection of the anaesthetic must be observed. The needle should lie over the tarsal plate and in the plane of the lid. The trainee can inject the anaesthetic ahead of the sliding needle, or slide the needle and withdraw, injecting the anaesthetic continuously.
6. *Ascertaining anaesthesia.* The local anaesthetic, 2–3 ml with the first injection, should be massaged into the eyelid for about one minute using a swab and gentle finger pressure. After 2–3 minutes, the trainee should pinch the eyelid with forceps to ascertain whether the patient feels pain. If pain is felt, additional anaesthetic can be administered but no more than 5 ml should be given in total.

## **6.6    *Operation***

1. \* *Proper placement of haemostats.* The examiner should observe proper placement of the haemostats, and the trainee should be able to explain why correct placement is essential. Medial placement is critical to avoid damage to the punctum and the canaliculus. Placement should not be beyond 5 mm of the lid margin, in order to avoid tearing the lid during eversion.
2. *Proper placement of lid guard (eyelid plate), if used.*

3. \* *Correct position, depth and extent of incision.* The incision on the eyelid must be in the correct position and of the correct depth, and must extend the correct distance across the eyelid: The examiner should observe that the incision is parallel to the lid margin and about 3 mm above it. The incision should include only skin and muscle on the skin surface of the lid, just superficial to the tarsal plate. If the incision is too deep the eyeball is jeopardized.
4. *Proper eversion of the lid.* There should be no tearing of the lid during eversion.
5. \* *Correct position, depth and extent of incision on the conjunctival surface.* Again, the incision should be 3 mm from the lid margin: it should meet the incision on the skin surface of the eyelid.
6. *Appropriate use of scissors to unite the incision.* Scissors should be used to gently open the tissue. The examiner must ascertain that the scissors are used only to finish the incision and not to cut a substantial amount of tissue.
7. *Haemostats removed from the lid within 15 minutes.* The trainee should understand the rationale for the time limit.
8. \* *Satisfactory completion of incision.* The examiner should use all the observations from the foregoing steps to assess the quality of the incision.
9. \* *Knowledge of possible complications and their management.* The trainee must show knowledge of at least the following three complications:
  - Damage to the globe, either from improper injection or bad incision. Prevention using the lid guard is the best strategy. Damage could have catastrophic consequences; if it occurs, the eye should be patched and the patient referred immediately to an ophthalmologist.
  - Excessive bleeding. If the wound is oozing, a compress may stop the bleeding. If bleeding persists and is spurting arterial blood, the marginal artery may have been cut; it should be clamped and a suture placed to stop the bleeding.
  - Division of the eyelid margin. If this occurs, the cut portions must be sutured together appropriately before the operation proceeds further.

## 6.7 Suturing

1. *Correct mounting of needles for suture placement.* The examiner must look for correct placement of the needle on the needle holder.
2. *Correct placement of sutures.* The examiner looks for sutures having the correct depth and bite in the tissues, as described in the WHO manual (3).
3. \* *Sutures correctly aligned on proximal and distal fragments.* Sutures should be aligned to look straight, and avoid “gathering” of tissue; no suture should be more than 1 mm out of alignment.

## 6.8 Tying sutures

1. \* *Firm tying of sutures.* Sutures must be tied with sufficient firmness to produce slight overcorrection, with eyelashes pointing away from the eyeball. The maximum correction can be about 3 mm if the incisions were correct.

2. *Appropriate skin sutures.* The examiner looks for 1-mm bites, tied together gently.
3. \* *Management of gross over- or under-correction.* The trainee must know how to correct gross over- or under-correction. Over-correction must be rectified intraoperatively by loosening the sutures and postoperatively by repeating the suturing, tying the sutures with less tension to reduce the over-correction as appropriate. Under-correction is corrected intraoperatively by tightening the sutures and postoperatively by removing the original sutures and repeating the suturing, tying the sutures with greater tension to achieve slight over-correction.

See Appendices 1 and 2 for Trabut and Cuenod Nataf procedure checklists and descriptions.

## **6.9 Postoperative care**

1. *Provision of appropriate postoperative care.* The examiner should observe the trainee cleaning the area, applying ointment to the wound, patching the eye with the lids closed, and placing adhesive tape diagonally across the patch (avoiding the mouth).
2. *Giving advice to the patient.* The trainee should advise the patient on postoperative care, telling the patient to remove the patch the next day, wash the face and eye with soap and water to keep the wound clean, apply the prescribed antibiotic ointment, and return for suture removal after an appropriate interval. Finally, the trainee should describe some of the complications, including excessive bleeding and pain, and persistent post-operative swelling that indicates infection, and instruct the patient to return if these develop.
3. \* *Knowledge of postoperative complications and their management.* The trainee should discuss excessive bleeding and use of pressure to control it, as well as the possible need to reopen the wound. He or she should also discuss infection, the use of systemic antibiotics, signs of serious infection (cellulitis) and the need to refer the patient to a hospital if the problem does not resolve in 48–72 hours. The latter should be referred to an ophthalmologist. If granulomas occur, they can be shaved off.

## **7. Use of the checklist**

The examiner should use the checklist, given below, for each trainee. All items should be scored as satisfactory or unsatisfactory for the first operation, but some of the questions on knowledge can be excluded for the subsequent operations. At the end of the five operations, the examiner calculates the total number of unsatisfactory marks for both starred and unstarred items. Any unsatisfactory mark for any starred item in any one operation is sufficient to deny certification until the trainee has had further training. A total of 10 unsatisfactory marks in the other, unstarred, items across the five operations is also sufficient to deny certification. A total of six to nine unsatisfactory scores should act as a warning: the examiner should discuss the problems with the trainee concerned and five additional operations must be performed satisfactorily in the presence of the examiner before final certification is awarded.

## Checklist of procedures for certification of surgeon in bilamellar tarsal rotation

**Examiner:** Please observe the trainee in all of the following procedures, and indicate whether each procedure is performed satisfactorily (tick “S”) or unsatisfactorily (tick “U”). If the procedure is not performed, you must indicate “unsatisfactorily”, since none of these procedures can be omitted. Mark your observations at the end of each operation. At the end of all five operations, total the scores. Trainees MUST perform the procedures marked with a star (\*) satisfactorily in order to be certified. No unsatisfactory marks in the items with stars (\*), and fewer than 10 unsatisfactory marks for all other items over all five operations, must be achieved for certification to be granted.

**SURGEON’S NAME:** \_\_\_\_\_

**EXAMINER’S NAME:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

Procedure	Lid 1 OD/OS		Lid 2 OD/OS		Lid 3 OD/OS		Lid 4 OD/OS		Lid 5 OD/OS	
	S	U	S	U	S	U	S	U	S	U
Assembly of necessary materials before surgery										
Knowledge of surgical materials										
<i>Sterilization of equipment before use</i>										
* Knowledge of sterile techniques										
* Appropriate sterilization by steam, heat, boiling, or glutaraldehyde of all non-disposable instruments										
* Handling of sterilized instruments and items (e.g. using sterile gloves, forceps, towels)										
<i>Examination of the patient</i>										
Greeted the patient appropriately										
Used a bright torch to examine the lid										
Looked up at the lid from below to see whether there was trichiasis										
* Correctly identified trichiasis										
* Determined whether there was defective lid closure										
Obtained a relevant medical history from the patient										
* Correctly classified patient as a surgical patient										
<i>Preoperative preparation</i>										
Explained to the patient what was wrong and what was going to happen during the procedure										
Administered topical anaesthetic										
Washed hands appropriately										
* Put on sterile gloves so as to maintain sterility										
* Prepared patient's face and eyelids using skin preparation solution (e.g. povidone iodine)										
<i>Injecting anaesthetic</i>										
Anaesthetic kept sterile										
Correct amount of anaesthetic drawn up (e.g. not more than 5 ml of lidocaine)										
* Re-checked that correct eye was receiving anaesthetic										
* Needle inserted properly – never pointed perpendicular to the eyelid skin										

Procedure	Lid 1		Lid 2		Lid 3		Lid 4		Lid 5	
	OD/OS		OD/OS		OD/OS		OD/OS		OD/OS	
	S	U	S	U	S	U	S	U	S	U
* Anaesthetic injected properly into the eyelid Anaesthesia ascertained by checking patient's response to pain										
<i>Operation</i> * Proper placement of haemostats * Incision on eyelid correctly positioned and of correct depth and extent; eyeball not pierced Lid everted without tearing * Incision on conjunctiva and tarsal plate correctly positioned and of correct depth and extent Appropriate use of scissors to unite incision Haemostats not left on the lid for more than 15 minutes * Incision completed satisfactorily * Knowledge of possible operative complications and their management Information on progress of surgery given to patient; ensured that patient was comfortable and well; reacted promptly to patient's needs										
<i>Suturing</i> Needles correctly mounted for suture placement Sutures correctly placed (e.g. correct depth and bite in tissues) Sutures evenly spaced across the incision * Correct alignment of sutures on proximal and distal fragments										
<i>Tying sutures</i> * Sutures tied with sufficient firmness to produce slight over-correction, eyelashes pointing away from eye Skin sutures appropriate * Knowledge of management of gross over- or under-correction										
<i>Postoperative care</i> Appropriate postoperative care given (e.g. dressings, ointment) Adequate postoperative advice given to the patient * Knowledge of postoperative complications and their management										

COMMENTS BY EXAMINER:

SCORE: No. of unsatisfactory \* items \_\_\_\_\_ No. of other unsatisfactory items \_\_\_\_\_

## References

1. Reacher MH et al. A controlled trial of surgery for trichomatous trichiasis of the upper lid. *Archives of Ophthalmology*, 1992, 110:667–674.
2. Bog H, Yorston D, Foster A. Results of community-based eyelid surgery for trichiasis due to trachoma. *British Journal of Ophthalmology*, 1993,77:81–83.
3. Reacher M, Foster A, Huber J. Trichiasis surgery for trachoma: the bilamellar tarsal rotation procedure. Geneva, World Health Organization, 2002 (WHO/PBL/93.29).

## Appendix 1

### Trabut method

While this document is intended for use in the certification of surgeons performing bilamellar tarsal rotation, it is recognized that other procedures are performed as well. This appendix briefly describes the Trabut method and provides a checklist for surgeons who are to be certified in the use of this method.

#### *Summary of method*

1. Refer to the WHO yellow manual<sup>1</sup> for aseptic technique and administration of local anaesthetic.
2. Application of traction suture.<sup>2</sup> The lid should not be everted at the start. Approximately 3 mm from the upper lid margin, insert the needle with suture through the skin and orbicularis, starting either laterally or medially. Take two large bites, about 5 mm in length, with a similar space in between. There should be a loop in the middle.
3. Everting the lid and keeping it in position. Sling the suture loop into a Trabut entropion plate or Wilde's entropion forceps, pulling the two suture ends and at the same time everting the lid. Use the forceps as a fulcrum as the lid is everted. The lid is kept in the everted position by clamping the suture to the drape using the haemostat forceps.
4. Incision of tarso-conjunctiva. Using the blade, scratch an incision along the Arlt's line (2–3 mm from the margin) and deepen the cut until the orbicularis muscle is reached (through the tarsal plate). Extend the incision over the whole length of the tarsal plate, ending just before the lachrymal punctum medially and laterally at the canthus. Place a tissue forceps on the proximal tarsal conjunctiva to hold the incised tarso-conjunctiva, and complete the incision with scissors.
5. Blunt dissection of the tarso-conjunctiva. Pick up the tarso-conjunctiva with tissue forceps. Insert closed scissors and spread them, dissecting the tarso-conjunctiva from the overlying orbicularis muscle. The dissection should extend for approximately 8 mm.
6. Suturing to achieve eversion of the distal fragment of the lid margin. Use mattress sutures, taking 1-mm bites of tarsal conjunctiva and half the thickness of the tarsal plate, passing the needle under the distal tarsal conjunctiva and emerging through the skin about 3 mm above the lid margin. A minimum of three or four evenly spaced mattress sutures are to be applied. To finish, all the sutures are pulled up together so as to bury the proximal fragment edge of the tarso-conjunctiva under the distal fragment. Starting in the middle, tie the sutures snugly with three single knots, and cut 3 mm above the knot.
7. Remove the traction suture and the Wilde's entropion forceps or Trabut plate. Apply topical antibiotic and dressing as described for BLTR.

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<sup>1</sup>

<sup>2</sup> Variations that allow for eversion of the lid and keeping it in the everted position are acceptable.

## Checklist of procedures for certification of surgeon in Trabut method

**Examiner:** Please observe the trainee in all the following procedures, and indicate whether the procedure is performed satisfactorily (tick “S”) or unsatisfactorily (tick “U”). If the procedure is not performed, you must indicate “unsatisfactorily”, since none of these procedures can be omitted. Mark your observations at the end of each operation. At the end of all five operations, total the scores. Trainees MUST perform the procedures marked with a star (\*) satisfactorily in order to be certified. No unsatisfactory marks in the items with stars (\*), and fewer than 10 unsatisfactory marks for all other items over all five operations must be achieved for certification to be granted.

**SURGEON’S NAME:** \_\_\_\_\_

**EXAMINER’S NAME:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

Procedure	Lid 1 OD/OS		Lid 2 OD/OS		Lid 3 OD/OS		Lid 4 OD/OS		Lid 5 OD/OS	
	S	U	S	U	S	U	S	U	S	U
Assembly of necessary materials before surgery Knowledge of surgical materials										
<i>Sterilization of equipment before use</i> * Knowledge of sterile techniques * Appropriate sterilization by steam, heat, boiling, or glutaraldehyde of all non-disposable instruments * Handling of sterilized instruments and items (e.g. using sterile gloves, forceps, towels)										
<i>Examination of the patient</i> Greeted the patient appropriately Used a bright torch to examine the lid Looked up at the lid from below to see whether there was trichiasis * Correctly identified trichiasis * Determined whether there was defective lid closure Obtained a relevant medical history from the patient * Correctly classified patient as a surgical patient										
<i>Preoperative preparation</i> Explained to the patient what was wrong and what was going to happen during the procedure Administered topical anaesthetic Washed hands appropriately * Put on sterile gloves so as to maintain sterility * Prepared patient’s face and eyelids using skin preparation solution (e.g. povidone iodine)										
<i>Injecting anaesthetic</i> Anaesthetic kept sterile Correct amount of anaesthetic was drawn up (e.g. not more than 5 ml of lidocaine) * Re-checked that correct eye was receiving anaesthetic * Needle inserted properly – never pointed perpendicular to eyelid skin										

Procedure	Lid 1		Lid 2		Lid 3		Lid 4		Lid 5	
	OD/OS		OD/OS		OD/OS		OD/OS		OD/OS	
	S	U	S	U	S	U	S	U	S	U
* Anaesthetic injected properly into the eyelid Anaesthesia ascertained by checking patient's response to pain										
<i>Operation</i> * Proper placement of traction suture Proper eversion of the eyelid without sutures cutting through the skin * Incision on conjunctiva and tarsal plate correctly positioned and of correct length * Incision completed satisfactorily Satisfactory use of scissors for blunt dissection * Knowledge of possible operative complications and their management Information on progress of surgery given to patient and ensured that patient was comfortable and well; reacted promptly to patient's needs										
<i>Suturing</i> Needles correctly mounted for suture placement Sutures correctly placed (e.g., correct depth and bite in tissues) * Sutures evenly spaced across the incision * Correct alignment of sutures on proximal and distal fragments										
<i>Tying sutures</i> * Sutures tied snugly without cutting through the skin so that the lid margin was everted and eyelashes pointed away from eye * Knowledge of management of gross over- or under-correction										
<i>Postoperative care</i> Appropriate postoperative care given (e.g. dressings, ointment) Adequate postoperative advice given to the patient * Knowledge of postoperative complications and their management										

COMMENTS BY EXAMINER:

SCORE: No. of unsatisfactory \* items \_\_\_\_\_ No. of other unsatisfactory items \_\_\_\_\_

## Appendix 2

### Cuenod Nataf method

While this document is intended for use in the certification of surgeons performing bilamellar tarsal rotation, it is recognized that other procedures are performed as well. This appendix briefly describes the Cuenod Nataf method, and provides a checklist for surgeons who are to be certified in the use of this method.

#### *Summary of method*

1. Refer to the WHO yellow manual<sup>1</sup> for aseptic technique and administration of local anaesthetic, unless using local infiltration of the upper lid injection. If using local infiltration of the upper lid.
2. Insert a lid plate firmly beneath the eyelid.
3. Grey line incision. Starting 1 mm laterally from the punctum, cut along the grey line as far as the lateral margin of the lid. The split should be deep enough for the lash root to be visible.
4. First lid incision. Make a horizontal incision through the skin and muscle at the upper tarsal border, from one end of the tarsus to the other, along the lid fold (2–5 mm above the lid margin). The incision should go from directly above the punctum to above the lateral margin at the same height as the grey line split.
5. Second lid incision. Determine the appropriate amount of skin to be removed from the lid. The goal is to remove enough skin for the loose folds to be flattened without stretching the skin. Make an arched incision through the skin and orbicularis muscle, joining the two ends of the incision with the ends of the previous incision. In young patients and recurrent cases, the second skin incision and skin removal may be unnecessary.
6. Skin removal. Using skin forceps and scissors, remove the excess skin flap.
7. Expose the tarsus. Pick up the distal edge of the skin incision and dissect bluntly towards the lid margin until the lash roots are seen, then upwards to the end of the tarsus to expose the whole tarsus.
8. Tarsal incision, grooving and wedge removal. Using a scalpel, make an elliptical, angled (45°) incision on the tarsal plate 4 mm above the lid margin. Then make a second angled (45°) incision back to and 2–3 mm above the first incision, then remove the tarsal wedge. The length of each incision should be approximately the length of the tarsus. The depth of the wedge is 1–1.5 mm, depending on the thickness of the tarsus. (In a conventional procedure, a triangular piece of the eyelid skin is removed at both the lateral cut ends of the skin incision to avoid puckering of the skin when sutured.)
9. Suturing. Three to four equidistant mattress sutures are placed along the width of the lid. Beginning at the lid margin, through the skin orbicularis, go through the cut distal tarsus, through the proximal tarsal fragment, and come out through the proximal tarsal fragment. Then go back through the tarsus at a distance of 3–4 mm from the first bite, driving the needle through the cut

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tarsal fragment and coming out through the skin orbicularis at the lid margin. Then, apply continuous skin sutures to close the skin wound and cut the edge of the suture. Pull up the ends of the tarsal sutures. Each suture should be tightened by placing the blunt edge of a pair of forceps at the junction of the sutures and the lid margin and pulling to achieve adequate firmness.

10. Haemostasis is maintained throughout the procedure. If sutures are not tied, do not trim suture ends but tape them to the patient's forehead, ensuring that adequate pressure is applied to maintain positioning of the lid.
11. Apply antibiotic ointment to the upper lid and lightly patch the wound and eye. After 24 hours, the correction is assessed. If correction is excessive, the knots are loosened; if it is less than desired, the knots are pulled tighter. The sutures are removed on the seventh day.

### ***Equipment***

Operating loupe  
Scalpel holder for blades  
Correct blade  
Needle holder  
Correct forceps  
Scissors  
Correct needles  
Correct suture material (suture and needles may be combined)  
Syringe  
Needles  
Topical anaesthetic  
Anaesthetic for injection  
Skin preparation solution (e.g. povidone iodine)  
1% TTC eye ointment or other postoperative antibiotic  
Surgical gloves  
Sterile gauze  
Sterile drape/inner paper containing the sterile gloves.  
Kidney dish (or similar tray)  
Galley pot  
Lid guard (if used)

## Checklist of procedures for certification of surgeon in Cuenod Nataf method

**Examiner:** Please observe the trainee in all the following procedures, and indicate whether each procedure is performed satisfactorily (tick “S”) or unsatisfactorily (tick “U”). If the procedure is not performed, you must indicate “unsatisfactorily”, since none of these procedures can be omitted. Mark your observations at the end of each operation. At the end of all five operations, total the scores. Trainees **MUST** perform the procedures marked with a star (\*) satisfactorily in order to be certified. No unsatisfactory marks in the items with stars (\*) and fewer than 10 unsatisfactory marks for all five operations must be achieved for certification to be granted.

**SURGEON’S NAME:** \_\_\_\_\_

**EXAMINER’S NAME:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

Procedure	Lid 1 OD/OS		Lid 2 OD/OS		Lid 3 OD/OS		Lid 4 OD/OS		Lid 5 OD/OS	
	S	U	S	U	S	U	S	U	S	U
Assembly of necessary materials before surgery Knowledge of surgical materials										
<i>Sterilization of equipment before use</i> * Knowledge of sterile techniques * Appropriate sterilization by steam, heat, boiling, or glutaraldehyde of all non-disposable instruments * Handling of sterilized instruments and items (e.g. using sterile gloves, forceps, towels)										
<i>Examination of the patient</i> Greeted the patient appropriately Used a bright torch to examine the lid Looked up at the lid from below to see whether there was trichiasis * Correctly identified trichiasis * Determined whether there was defective lid closure Obtained a relevant medical history from the patient * Correctly classified patient as a surgical patient										
<i>Preoperative preparation</i> Explained to the patient what was wrong and what was going to happen during the procedure Administered topical anaesthetic Washed hands appropriately * Put on sterile gloves so as to maintain sterility * Prepared patient’s face and eyelids using skin preparation solution (e.g. povidone iodine)										
<i>Injecting anaesthetic</i> Anaesthetic kept sterile Correct amount of anaesthetic drawn up (e.g. not more than 5 ml of lidocaine) * Re-checked that correct eye was receiving anaesthetic * Needle inserted properly										

Procedure	Lid 1		Lid 2		Lid 3		Lid 4		Lid 5	
	OD/OS		OD/OS		OD/OS		OD/OS		OD/OS	
	S	U	S	U	S	U	S	U	S	U
* Anaesthetic injected properly Anaesthesia ascertained by checking patient's response to pain										
<i>Operation</i> * Lid plate properly placed * Proper incision along the grey line (appropriate placement, depth and length) * Proper skin incisions, with appropriate judgement of amount of excess skin to remove Appropriate dissection of skin orbicularis to expose tarsus * Adequate removal of tarsal wedge * Knowledge of possible operative complications and their management (question asked on first surgery only) * Reacted promptly to patient's needs if necessary										
<i>Suturing</i> Needles correctly mounted for suture placement Sutures correctly placed (e.g. correct depth and bite in tissues) Sutures evenly spaced across the incision * Correct alignment of sutures on proximal and distal fragments										
<i>Tying sutures</i> * Sutures pulled tightly, without tissue damage, so that the lid margin is everted and eyelashes point away from the eye. * If sutures <u>not</u> tied, sutures taped to forehead with sufficient tension. (This can be done only in areas where patient can return to the clinic daily.) * Knowledge of management of gross over- or under-correction										
<i>Postoperative care</i> Appropriate postoperative care given (e.g. dressings, ointment) Adequate postoperative advice given to the patient * Knowledge of postoperative complications and their management										

COMMENTS BY EXAMINER:

SCORE: No. of unsatisfactory \* items \_\_\_\_\_ No. of other unsatisfactory items \_\_\_\_\_