



# **BOKSMART 2010**

**ON-FIELD AIRWAY MANAGEMENT  
TECHNIQUES**

*Providing coaches, referees, players, and administrators with the knowledge, skills, and leadership abilities to ensure that safety and best practice principles are incorporated into all aspects of contact rugby.*



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A joint initiative by SARU and the Chris Burger/Petro Jackson Fund

**AIRWAY MANAGEMENT WITH POSSIBLE CERVICAL INJURY**  
**HEAD TILT CHIN LIFT VERSUS CHIN LIFT**

**Prof. Robert Dunn**

*MBChB (UCT) MMed (UCT) Orth, FCS(SA) Orth*

*Consultant Spine and Orthopaedic Surgeon*

*Head: Orthopaedic Spine Services – Grootte Schuur Hospital, Cape Town*

*Clinical Adviser to BokSmart programme*

## **SUMMARY:**

The 'chin lift' or 'jaw thrust' technique should be used for on-field airway control. Any head tilt should be avoided.

## **INTRODUCTION:**

Rugby is a contact sport and players are therefore at risk of injury. A player sustaining a head injury may experience a reduced level of consciousness. At this time the tongue may fall back and obstruct breathing. Primary medical care personnel are trained to protect the airway as priority. Failure to do so may result in asphyxiation and death.

In a collision there is a possibility of cervical spine injury. It is frequently associated with head injury and transient reduced level of consciousness. Thus although airway management is a priority, it should be performed in a manner that minimises cervical motion and thus avoids secondary spinal cord injury in a potentially unstable spine.

## **DEFINITION AND MECHANISM:**

### **CHIN LIFT'**

This manoeuvre lifts the chin forward without changing neck or head position. Fingers of one hand are placed under the mandible, which is gently lifted to bring the chin forward. The thumb of the same hand simultaneously depresses the lower lip to open the mouth. If necessary, the thumb may be placed behind the lower teeth and the chin lifted gently. The neck should never be hyperextended.

### **JAW THRUST'**

The angles of the jaw are grasped on both sides, with each hand as well as the mandible brought forward. This requires both hands and is useful when administering a ventilation mask.

### **HEAD TILT**

This is when the head is hyperextended and is contra-indicated in any patient with a potential cervical injury. This is generally used when intubating a patient (with a stable neck) to allow access to the trachea.

### **LITERATURE REVIEW:**

Manipulation of the head has an effect on the cervical spine. Mechanistic studies have been done to quantify this. Donaldson<sup>2</sup> investigated the effect of destabilising the C5/6 vertebral level in a cadaver model. They assessed that the intact spine moved an average of 8.76° at C5/6 during flexion and extension. Once the level was destabilised, this increased to 45.5°. Likewise, the translation increased from 0.43mm to 14.18mm. This confirms the intuitive advice to minimise cervical motion in the setting of instability, as these exaggerated movements will increase the forces applied to the spinal cord. They went further to assess various airway manipulation and intubation techniques. Chin lift and jaw thrust still caused some motion at the unstable level, viz. 3.51° and 0.57mm. These are close to the motion tolerated by the normal spine.

Brimacombe<sup>3</sup> performed a similar study in cadavers, destabilising the C3 level. They recorded a maximum displacement of 1.9mm and angular change of 2.7° with the chin lift / jaw thrust technique.

Meier<sup>4</sup> studied the effect of various airway maintenance techniques in anaesthetised children. She found the chin lift and jaw thrust to be similarly effective. Guildner<sup>5</sup> however reported that the chin lift technique provided the most consistently adequate airway when assessing anaesthetised elective paediatric patients. Roth assessed the head-tilt versus jaw-lift techniques in the paediatric group while anaesthetised but breathing spontaneously. He found the head tilt to be ineffective in 12% and recommended the jaw thrust<sup>6</sup>.

Swartz<sup>7</sup> et al published the National Athletic Trainers' Association Position Statement (USA) in 2009 after an extensive literature review. This comprehensive document deals with many aspects of care. As regards airway management they are quite clear on promoting the jaw thrust manoeuvre over the head-tilt technique, as the latter produces unnecessary motion at the head and in the cervical spine. They allocated this a "B" category of evidence, which meant that their recommendation was based on inconsistent or limited-quality patient-oriented evidence.

**PROS AND CONS:**

It is clear both intuitively and from the available literature that airway management should limit cervical motion as much as possible in the known or suspected cervical spine injury.

When a collision occurs on the rugby field, a cervical spine injury must be considered until it can be excluded. Should the player complain of any neck pain, s/he should be managed as if a cervical injury has occurred.

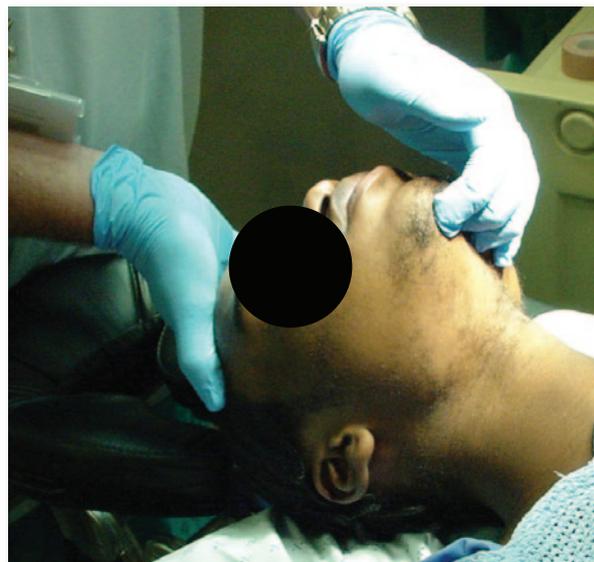
In the case of concomitant head injury and reduced level of consciousness, the neck must again be managed as if an injury exists.

It is quite clear that the 'head tilt' technique causes cervical motion and confers a risk of spinal cord injury should a cervical injury be present. In contrast, cadaver studies have confirmed minimal cervical motion with the chin lift / jaw thrust techniques.

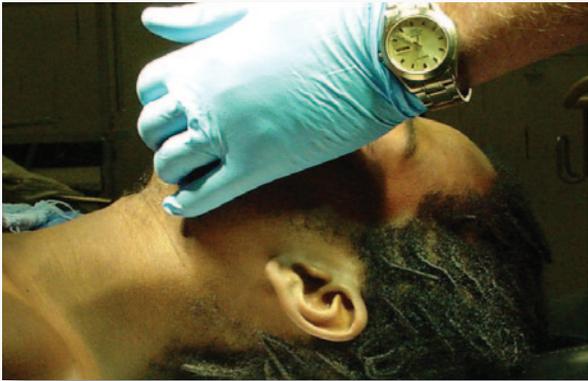
Thus the airway should be maintained by the chin lift or jaw thrust technique.

In the unlikely event that this fails to maintain the airway, and only then, gentle head tilt may be used based on the philosophy of "life over limb".

**HEAD TILT – CHIN LIFT TECHNIQUE (not recommended as cervical spine at risk!)**



**CHIN LIFT TECHNIQUE**



**JAW THRUST TECHNIQUE**



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