






CG010a Maxillo-Facial Trauma - Major Facial Haemorrhage (RapidRhino)

1. Key Recommendations for operational use			
A	Airway	<ul style="list-style-type: none"> Induce anaesthesia to secure the airway with a cuffed endotracheal tube: Use CG007 Emergency Anaesthesia with the following considerations: Consider inducing a fully conscious patient in the position they are most comfortable Ensure 2 suction units are available / functioning to maintain good airway toilet: <ul style="list-style-type: none"> Yankauer suction catheter may need to remain the oropharynx during intubation consider head-down tilt if trolley can provide this Consider the best technique of pre-oxygenation: <ul style="list-style-type: none"> the injury may preclude apnoeic oxygenation satisfactory face mask seal to facilitate bag and mask ventilation may be difficult Consider early use of a supraglottic airway Consider a “double set-up”: single attempt at oral intubation followed by immediate “front of neck access” (FONA) if unsuccessful Consider FONA facilitated by ketamine dissociation as the primary technique in the event of a “have no time” scenario (hypoxic and obstructing) 	
		<ul style="list-style-type: none"> Soak the Rapid Rhino with a saline flush Insert Rapid Rhinos bilaterally (even if haemorrhage is just from one side): <ul style="list-style-type: none"> DO NOT INFLATE at this stage 	
B	Bite blocks	<ul style="list-style-type: none"> Insert the dental blocks either side of the tracheal tube and position between the molars: <ul style="list-style-type: none"> point of wedge toward the back of the mouth tie the chain on the dental blocks together or tape them to the side of the cheek 	
C	Cervical Collar	<ul style="list-style-type: none"> Re-apply the cervical collar - to brace the mandible 	



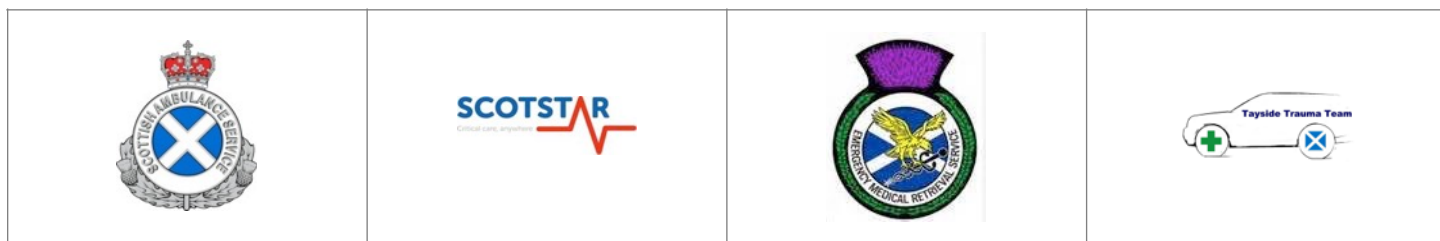
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D	<p>Deploy Rapid Rhino</p>	<ul style="list-style-type: none"> • Inflate posterior (denoted by butterfly wings) nasal space balloon with air using 20ml syringe: <ul style="list-style-type: none"> - enough to stop the Rapid Rhino being pulled out with light traction. - Use the pilot cuff to monitor pressure like you would with an endotracheal tube • Now inflate the anterior balloons (No butterfly) with increments of air each side until pilot balloon rounded and firm 	
E	<p>Extra packing</p>	<ul style="list-style-type: none"> • Pack oropharyngeal spaces with ribbon gauze if necessary 	
F	<p>Further considerations</p>	<ul style="list-style-type: none"> • Correct coagulopathy as required • Administer tranexamic acid • Unstable mandible fractures may cause the tongue to obstruct the airway: <ul style="list-style-type: none"> - the conscious patient will usually be sitting holding their jaw forwards - it may be best to transport in this position - if unconscious, airway patency may be restored by placing a horizontal mattress suture through the tongue and applying traction • In major haemorrhage from the nose in the conscious patient: <ul style="list-style-type: none"> - assess maxilla stability by gripping the upper incisors and pull forwards - if non-tender and not mobile, control epistaxis by inserting Rapid Rhino and reassess - if unstable then realign to correct position and reassess - if bleeding remains torrential proceed with anaesthesia and full splintage as above • Bleeding tooth sockets in the conscious patient can be controlled by asking them to bite down on gauze swabs (preferably soaked in adrenaline) • Missing teeth if found may be re-implanted to control bleeding if the patient is conscious: <ul style="list-style-type: none"> - otherwise transport in saline (ideally milk) 	



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2. Document History			
Reference Number	CG010a		
Version	1		
Writing group (Chair in bold)	Michael Gillespie	Emergency Physician	EMRS
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Date issued	5th August 2019		
Date for review	August 2022		
Distribution	ScotSTAR	EMRS West	✓
		EMRS North	✓
		Paediatric	X
		Neonatal	X
	Referring centres via service websites		✓
	BASICS Scotland		X
	Medic 1		X
	Tayside Trauma Team		✓
	Rural GPs Association of Scotland		X
SAS Air Ambulance Division		for information	





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3. Scope and purpose

- Overall objectives:

To provide guidance on splintage of the mid-face in cases of torrential haemorrhage from blunt maxillofacial trauma; this may help reduce or arrest bleeding using a combination of cuffed tracheal intubation (oral or surgical), Rapid-Rhino[®] dental blocks and cervical collar. Anaesthesia considerations are highlighted and some specific situations are discussed. It does not cover other craniofacial or ENT traumatic emergencies.

- Statement of intent:

This guideline is not intended to be construed or to serve as a standard of care. Adherence to guideline recommendations will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan. Clinicians using this guideline should work within their skill sets and usual scope of practice.

- Feedback:

Comments on this guideline can be sent to: scotamb.CPG@nhs.net

- Equality Impact Assessment:

Applied to the ScotSTAR Clinical Standards group processes.

- Guideline process endorsed by the Scottish Trauma Network Prehospital, Transfer and Retrieval group.





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4. Explanatory Statements		
4.1 Airway	Authors' recommendation	Level [Reference]
<ul style="list-style-type: none"> Induce anaesthesia to secure the airway with a cuffed endotracheal tube: <ul style="list-style-type: none"> use CG007 Emergency Anaesthesia with the following considerations: <p>Maxillofacial haemorrhage may be torrential in up to 11% of cases of severe facial fractures. It is primarily from the internal maxillary artery and its interosseous branches. It is usually associated with an obstructed airway (real or impending). Torrential haemorrhage, pooling of blood, intra-oral or pharyngeal haematomas, restricted mouth opening, compression of the nasopharynx from posterior-inferior displacement of maxilla, posterior tongue displacement, dislodged teeth and bone fragments, foreign bodies, vomitus, laryngo-tracheal and neck fractures are all potential challenges for airway management. This is compounded in the unconscious patient.</p>	GPP	[1-4]
<ul style="list-style-type: none"> Consider inducing a fully conscious patient in the position they are most comfortable. 	Conditional	4 [2]
<ul style="list-style-type: none"> Ensure 2 suction units are available / functioning to maintain good airway toilet: <ul style="list-style-type: none"> Yankauer suction catheter may need to remain the oropharynx during intubation consider head-down tilt if trolley can provide this 	GPP	
<ul style="list-style-type: none"> Consider the best technique of pre-oxygenation: <ul style="list-style-type: none"> the injury may preclude apnoeic oxygenation satisfactory face mask seal to facilitate bag and mask ventilation may be difficult 	GPP	
<ul style="list-style-type: none"> Consider early use of a supraglottic airway 	GPP	
<ul style="list-style-type: none"> Consider a "double set-up": single attempt at oral intubation followed by immediate "front of neck access" (FONA) if unsuccessful 	GPP	
<ul style="list-style-type: none"> Consider FONA facilitated by ketamine dissociation as the primary technique in the event of a "have no time" scenario (hypoxic and obstructing) 	GPP	



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<ul style="list-style-type: none"> • Soak the Rapid Rhino with a saline flush • Insert Rapid Rhinos bilaterally (even if haemorrhage is just from one side): <ul style="list-style-type: none"> - DO NOT INFLATE at this stage <p>If Rapid Rhino are inflated before collar and bite blocks applied, this may cause distraction of a maxilla fracture and increase bleeding.</p>	Conditional	3 [5] 4 [7]
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4.2 Bite Blocks	Authors' recommendation	Level [Reference]
<ul style="list-style-type: none"> • Insert the dental blocks either side of the tracheal tube and position between the molars: <ul style="list-style-type: none"> - point of wedge toward the back of the mouth. - tie the chain on the dental blocks together or tape them to the side of the cheek <p>For the Rapid-Rhino to provide tamponade in the nasal space it is important that the hard palate is braced against the lower jaw [which is supported by a cervical collar] with dental blocks. Failure to do this will result in a mobile maxilla being pushed off the base of the skull and increase the space for bleeding</p>	Conditional	4 [2] 3 [6] 4 [7]

4.3 Cervical Collar	Authors' recommendation	Level [Reference]
<ul style="list-style-type: none"> • Re-apply the cervical collar - to brace the mandible 	Conditional	4 [2] 3 [6] 4 [7]

4.4 Deploy Rapid Rhino	Authors' recommendation	Level [Reference]
<ul style="list-style-type: none"> • Inflate posterior (denoted by butterfly wings) nasal space balloon with air using 20ml syringe: <ul style="list-style-type: none"> - enough to stop the Rapid Rhino being pulled out with light traction. - Use the pilot cuff to monitor pressure like you would with an endotracheal tube • Now inflate the anterior balloons (No butterfly) with increments of air each side until pilot balloon rounded and firm 	Conditional	4 [2,4] 3 [6] 4 [7]

4.5 Extra packing	Authors' recommendation	Level [Reference]
<ul style="list-style-type: none"> • Pack oropharyngeal spaces with ribbon gauze if necessary 	GPP	



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4.6 Further considerations	Authors' recommendation	Level [Reference]
<ul style="list-style-type: none">• <i>Correct coagulopathy as required</i>	Strong	Guideline [8]
<ul style="list-style-type: none">• <i>Administer tranexamic acid</i>	Strong	1++ [9]
<ul style="list-style-type: none">• <i>Unstable mandible fractures may cause the tongue to obstruct the airway:</i><ul style="list-style-type: none">- <i>the conscious patient will usually be sitting holding their jaw forwards</i>- <i>it may be best to transport in this position</i>- <i>if unconscious, airway patency may be restored by placing a horizontal mattress suture through the tongue and applying traction</i>	GPP	4 [2]
<ul style="list-style-type: none">• <i>In major haemorrhage from the nose in the conscious patient:</i><ul style="list-style-type: none">- <i>assess maxilla stability by gripping the upper incisors and pull forwards</i>- <i>if non-tender and not mobile, control epistaxis by inserting Epistats and reassess</i>- <i>if unstable then realign to correct position and reassess</i>- <i>if bleeding remains torrential proceed with anaesthesia and full splintage as above</i>	GPP	4 [2]
<ul style="list-style-type: none">• <i>Bleeding tooth sockets in the conscious patient can be controlled by asking them to bite down on gauze swabs (preferably soaked in adrenaline)</i>	GPP	4 [10]
<ul style="list-style-type: none">• <i>Missing teeth if found may be re-implanted to control bleeding if the patient is conscious:</i><ul style="list-style-type: none">- <i>otherwise transport in saline (ideally milk)</i>	GPP	4 [10]



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5. References

1. Barak M et al. Airway Management of the Patient with Maxillofacial Trauma: Review of the Literature and Suggested Clinical Approach. *BioMed Research International* 2015; 724032
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9. Shakur H et al. Effects of tranexamic acid on death, vascular occlusive events, and blood transfusion in trauma patients with significant haemorrhage (CRASH-2): a randomised, placebo-controlled trial. *Lancet* 2010; 376(9734): 23-32.
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