

Diagnostic Imaging Pathways - Facial Trauma

Population Covered By The Guidance

This pathway provides guidance on the imaging of adult patients presenting with facial trauma.

Date reviewed: August 2013

Date of next review: 2017/2018

Published: August 2013

Quick User Guide

Move the mouse cursor over the **PINK** text boxes inside the flow chart to bring up a pop up box with salient points.

Clicking on the **PINK** text box will bring up the full text.

The relative radiation level (RRL) of each imaging investigation is displayed in the pop up box.

SYMBOL	RRL	EFFECTIVE DOSE RANGE
	None	0
	Minimal	< 1 millisieverts
	Low	1-5 mSv
	Medium	5-10 mSv
	High	>10 mSv

Pathway Diagram

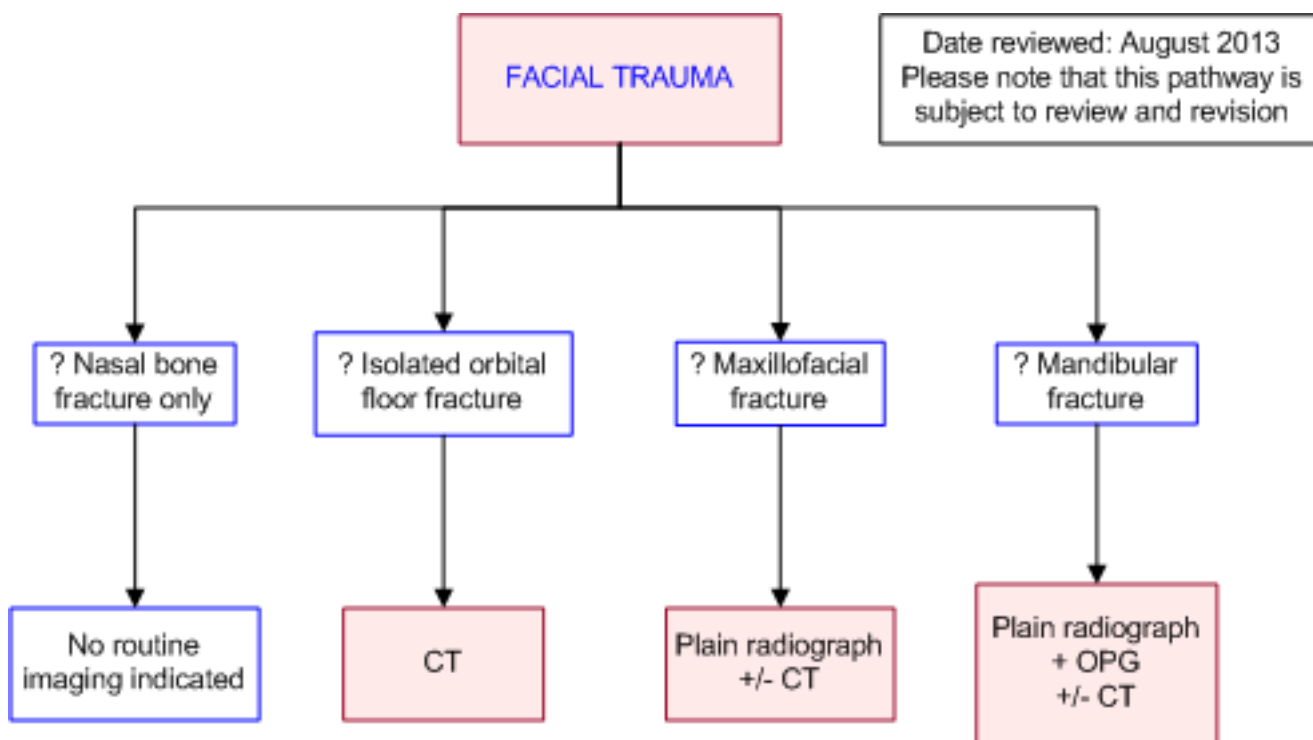


Image Gallery

Note: Images coming soon.

Teaching Points

- High-resolution Computed Tomography (CT) is considered the most important modality for imaging facial trauma

Facial Trauma

- High-resolution Computed Tomography (CT) is considered the most important modality for imaging facial trauma [1-3](#)
- CT is superior to conventional radiography and MRI in detecting facial fractures and is able to accurately define the direction, extent, and displacement of facial fractures [1](#)

Plain Radiography, Orthopantomogram and Computed Tomography (CT) in Mandibular Injury

- Mandibular fractures are often imaged by conventional radiography and orthopantomogram, [12-14](#) which can include the entire bone on one film [1](#)
- Helical computed tomography has surpassed orthopantomography as the current gold standard for the radiological evaluation and diagnosis of mandible fractures [15,16](#)

- Charalambous et al from Manchester Royal Infirmary have come up with a clinical decision rule to reduce the need for imaging suspected mandibular fractures. [17](#) They identified 5 parameters (malocclusion, trismus, broken teeth, pain with mouth closed, step deformity) presence of any of which could identify mandibular fracture with a sensitivity of 100%. However their study needs to be prospectively validated

Plain Radiography and Computed Tomography (CT) in Maxillofacial Injury

- A single occipitomental view can accurately identify all maxillofacial fracture requiring treatment. Further views are unnecessary and add little clinical value [4,5](#)
- Consideration should be given to computed tomographic scanning with three-dimensional reconstruction of the facial skeleton for any patient found to have fractures on the Waters views [5,6](#)

Computed Tomography (CT) in Ocular and Orbital Injury

- CT scan provides accurate information on the diagnosis and extent of the orbital floor fractures [7,8](#)
- Plain radiographs have 30-50% chance of being false positive and thus are non-diagnostic [9,10](#)

References

References are graded from Level I to V according to the Oxford Centre for Evidence-Based Medicine, Levels of Evidence. [Download the document](#)

- [1.](#) Sun JK, LeMay DR. **Imaging of facial trauma.** Neuroimag Clin N Am. 2002;12(2):295-309. (Review article)
- [2.](#) Kassel E, Noyek A, Cooper P. **CT in facial trauma.** J Otolaryngol. 1983;12(1):2-15. (Review article)
- [3.](#) Salvolini U. **Traumatic injuries: imaging of facial injuries.** Eur Radiol. 2002;12:1253-61. (Review article)
- [4.](#) Sidebottom A, Lord T. **Single view radiographic screening of midfacial trauma.** Int J Oral Maxillofac Surg. 1998;27(5):356-7. (Level III evidence)
- [5.](#) Pogrel M, Podlesh S, Goldman K. **Efficacy of a single occipitomental radiograph to screen for midfacial fractures.** J Oral Maxillofac Surg. 2000;58(1):24-6. (Level II evidence)
- [6.](#) Goh S, Low B. **Radiologic screening for midfacial fractures: a single 30-degree occipitomental view is enough.** J Trauma. 2002;52(4):688-92. (Level II evidence)
- [7.](#) Ceallaigh P, Ekanaykae K, Beirne C, Patton D. **Diagnosis and management of common maxillofacial injuries in the emergency department. Part 4: orbital floor and midface fractures.** Emerg Med J. 2007;24(4):292-3. (Review article)
- [8.](#) Key S, Dhariwalb D, Patton D. **Beware the black eye.** Trauma 2002;4:237-45. (Review article)
- [9.](#) Brady S, McMann M, Mazzoli R, Bushley D, Ainbinder D, Carroll R. **The diagnosis and management of orbital blowout fractures: Update 2001.** Am J Emerg Med. 2001;19(2):147-54. (Level III evidence)
- [10.](#) Bhattacharya J, Moseley I, Fells P. **The role of plain radiography in the management of suspected orbital blow-out fractures.** Br J Radiol. 1997;70:29-33. (Level III evidence)
- [11.](#) Lacey GD, Wignall B, Hussain S, Reidy J. **The radiology of nasal injuries: problems of interpretation and clinical relevance.** Br J Radiol. 1977;50:412-4. (Level III evidence)
- [12.](#) Chayra G, Meador L, Laskin D. **Comparison of panoramic and standard radiographs for the**



- diagnosis of mandibular fractures.** J Oral Maxillofac Surg. 1986;44:677-9. (Level III evidence)
13. Moilannen A. **Primary radiographic diagnosis of fractures in the mandible.** Int J Oral Surg. 1982;11:299-303. (Level III evidence)
 14. Johnston C, Doris P. **Clinical trial of pantomography for the evaluation of mandibular fracture.** Ann Emerg Med. 1980;9:415-8. (Level III evidence)
 15. Roth F, Kokoska M, Awwad E, Martin D, Olson G, Hollier L, et al. **The identification of mandible fractures by helical computed tomography and panorex tomography.** J Craniofac Surg. 2005;16(3):394-9. (Level II evidence)
 16. Wilson I, Lokeh A, Benjamin C, Hilger P, Hamlar D, Ondrey F, et al. **Prospective comparison of panoramic tomography (zonography) and helical computed tomography in the diagnosis and operative management of mandibular fractures.** Plast Reconstr Surg. 2001;107(6):1369-75. (Level II evidence)
 17. Charalambous C, Dunning J, Omorphos S, Cleanthous S, Begum P, Mackway-Jones K. **A maximally sensitive clinical decision rule to reduce the need for radiography in mandibular trauma.** Ann R Coll Surg Engl. 2005;87(4):259-63. (Level III evidence)

Information for Consumers

Information from this website	Information from the Royal Australian and New Zealand College of Radiologists' website
<p>Consent to Procedure or Treatment</p> <p>Radiation Risks of X-rays and Scans</p> <p>Computed Tomography (CT)</p> <p>Plain Radiography (X-ray)</p>	<p>Computed Tomography (CT)</p> <p>Plain Radiography/X-rays</p> <p>Radiation Risk of Medical Imaging During Pregnancy</p> <p>Radiation Risk of Medical Imaging for Adults and Children</p>

Copyright

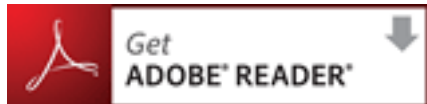
© Copyright 2015, Department of Health Western Australia. All Rights Reserved. This web site and its content has been prepared by The Department of Health, Western Australia. The information contained on this web site is protected by copyright.

Legal Notice

Please remember that this leaflet is intended as general information only. It is not definitive and The Department of Health, Western Australia can not accept any legal liability arising from its use. The information is kept as up to date and accurate as possible, but please be warned that it is always subject to change

File Formats

Some documents for download on this website are in a Portable Document Format (PDF). To read these files you might need to download Adobe Acrobat Reader.



[Legal Matters](#)