Repositioning and retaining significantly displaced teeth. A case report demonstrating how multidisciplinary management can optimise outcomes.

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BACKGROUND AND AIMS

Luxation injuries are the most common dental injuries[1], which can often result in complicated sequela, poor outcomes and an increased treatment burden.

Luxation injuries include avulsions, lateral displacements and intrusion of teeth. Each of these injuries can result in either a crushing or separation injury to the PDL. A crushing injury is deemed to be the worst with poorer outcomes. This type of injury is most often associated with intrusion and severe lateral luxation injuries. Timely intervention and close monitoring is vital in achieving successful outcomes.

This case demonstrates how collaboration between maxillofacial surgeons, orthodontists and restorative dentists has allowed the patient to retain nearly all of their own teeth 10 years after a severe trauma resulting in all three types of luxation injuries to the upper anterior teeth.

CASE REPORT

A 34-year-old female patient presented following a road traffic accident involving a bicycle and van. The patient sustained right body of mandible fracture, bilateral condyle fractures, an anterior maxillary dentoalveolar fracture and severely luxated teeth sitting lateral to the nasal cavity (Fig 1).

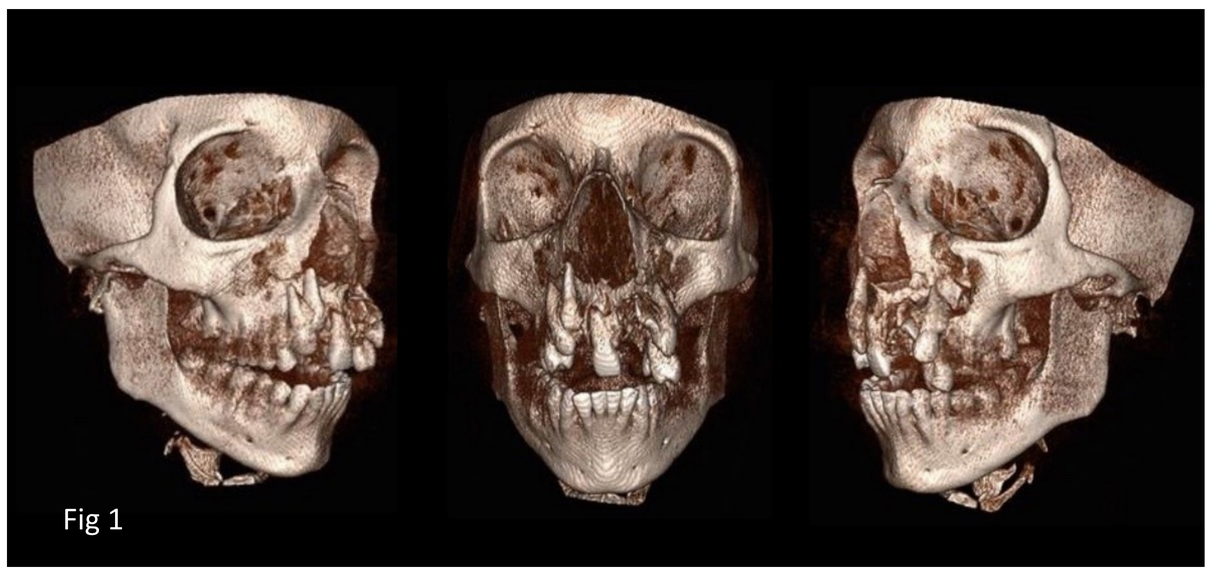
Fig 1

Maxillofacial Management:

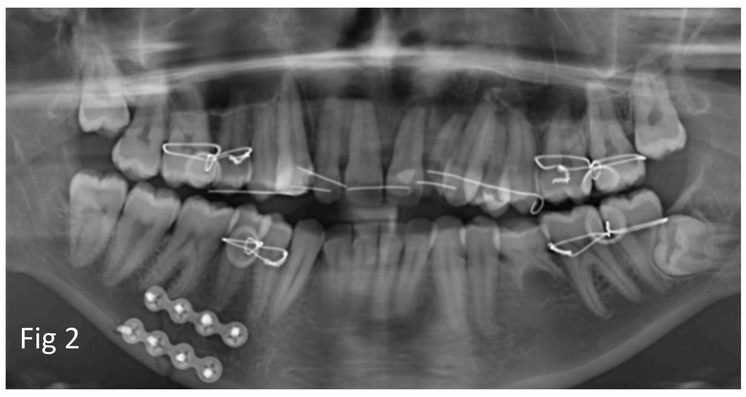
Fig 2

- Open reduction and internal fixation of the mandible and condyles (Fig 2)
- Intermaxillary fixation using wire
- The UL1 and UL2 which had been avulsed were stored in milk medium for several hours
- Despite the poor prognosis of the teeth UR3 to UL3 these teeth were retained, repositioned and splinted in place
- Repositioning the teeth took twice as long as repairing the fractures

Restorative Management Phase 1:

- Patient was seen 2 weeks post trauma, The soft tissue had settled and a labial sinus corresponding to the UL2 region was noted (Figs 3-5)
- The UR3-UL3 were extirpated and dressed to manage the devitalised teeth and to prevent inflammatory resorption taking place (Figs 6, 7)
- Given the extent of the injury the plan was to encourage replacement resorption
- Due to the crowding and underlying malocclusion an orthodontic opinion was obtained


Fig 3


Fig 4


Fig 5


Fig 6


Fig 7

REFERENCES

1 - DiAngelis A et al. International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: 1. Fractures and luxations of permanent teeth. Dental Traumatology. 2012;28(1):2-12.

2 - Lee J, Divaris K. Hidden consequences of dental trauma: the social and psychological effects. Paediatric Dentistry. 2009;31(2):96-101.

Orthodontic Management:

- Orthodontic treatment was undertaken to correct the crossbites and relieve the crowding despite the risk to the anterior teeth (Figs 8-10)
- Not undertaking this treatment would make restorative replacement of these teeth very difficult in the future
- During treatment the teeth were closely monitored and left dressed with $Ca(OH)_2$
- Treatment had to be stopped after 1.5 years due to the upper anterior teeth becoming ankylosed
- By this stage there had been a correction in the cross bite and improved alignment of the upper anterior teeth (Figs 11, 15)


Fig 8

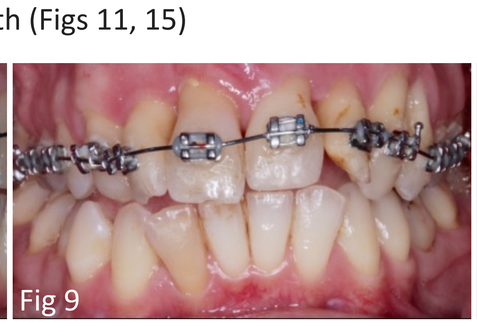
Fig 9


Fig 10

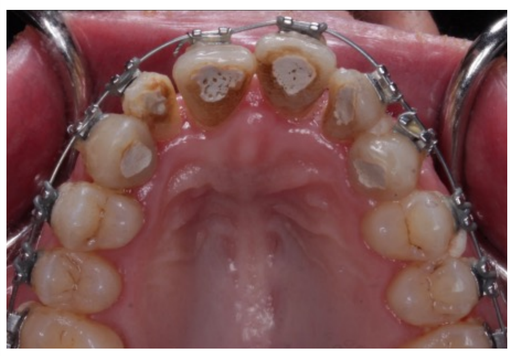
Fig 11


Fig 12


Fig 13


Fig 14

Restorative Management Phase 2:

- Endodontic treatment was completed for the UR3, UR2, UR1 and UL1, UL3 (Fig 12-14)
- UL2 had external resorption, 100% bone loss and deemed to be unrestorable
- UL2 was extracted and replaced with temporary removable partial denture
- Non vital inside outside tooth whitening was undertaken
- UR1, UR2, UR3 and UL1 and UL3 were built up using composite resin to improve their appearance (Fig 16)
- Long term replacement of UL2 was completed with an adhesive bridge from UL1 (Figs 17, 18)


Fig 15


Fig 16


Fig 17


Fig 18

Post Trauma Review

The outcome remained stable with good bone maintenance at six years (Figs 19-21). The patient currently remains stable at her 9 year review.


Fig 19


Fig 20


Fig 21

DISCUSSION

Severe luxation injures can cause devastating physical and psychological consequences.[2] In this case, loss of the teeth or not repositioning them would have resulted in extensive horizontal and vertical bone loss and spacing issues for prosthetic rehabilitation. Implant rehabilitation would have been challenging and the patient would have had a poor aesthetic outcome. By saving the teeth, potentially extensive and invasive treatment was avoided in the short/medium term and has potentially reduced complexity of subsequent fixed prosthodontics.