Mortality from PFF is high. Approximately, 10% of patients die within 1 month and about one third die within 1 year. Early surgical fracture fixation (SFF) and prompt rehabilitation are paramount. Studies have shown that length of hospital stay, morbidity and mortality are directly related to time to SFF.

The current UK expenditure for medical and social care for all hip fractures amounts to approximately 2 billion GBP. In April 2010, the best practice tariff (BPT) for fragility hip fractures was introduced. This highlighted the need for early SFF and financially rewards National Health Service hospital trusts with uplift to the tariff price. There are six criteria that have to be satisfied to receive an uplifted tariff price and early SFF is one of these criteria. The BPT sets the standard of time to surgery (TTS) within 36 h from arrival in the emergency department or time of diagnosis if an inpatient, to the start of anaesthesia. If a Trust meets all the criteria they will receive an extra 890 GBP/patient. Prior to the introduction of the BPT, the British Orthopaedic Association had published a Standard for Trauma (BOAST 1) and recommended that TTS should not be greater than 48 h from admission, unless there are clear reversible medical conditions.

Patients with PFF commonly have comorbidity that affects peri-operative management. Whilst TTS of less than 36-48 h is the goal, it has to be timed with any pre-operative optimisation of the patient.

Pre-operative echocardiogram (POE) is a valuable imaging modality for assessing a patient’s intravascular volume status, myocardial contractility/ventricular ejection fraction and valvular heart disease in the peri-operative period. The aim of this audit was to assess if POE in patients with PFF presenting to our institution resulted in a delay to TTS beyond 48 h.

**METHODOLOGY**

A retrospective audit was performed at the Princess Royal Hospital in Telford, UK.

The hospital clinical coding system was searched for patients that received treatment for a PFF between 1st January 2009 and 31st December 2009. Further data searches were performed from theatre records and clinical notes. Patients that did not have surgical treatment for their PFF were excluded from the study.
From this dataset, patients who underwent POE were identified. The following details were recorded; time to echocardiogram (TTE) and TTS.

RESULTS

A total of 228 patients were admitted with PFF and underwent SFF during the study period. Of this group, 13 patients were investigated with POE.

Table 1 shows the TTE. The results show that 10 out of 13 patients who received a POE (76.9%) had to wait more than 48 h for their POE. This led to a breach in the BOAST 1 guideline.

Table 2 shows the TTS for patients who underwent POE and in those who did not. 84.7% of patients that did not undergo POE had TTS within 48 h in accordance with the BOAST 1 guideline. In comparison, only 15.4% of patients that did undergo POE had a delay resulting in a TTS greater than 48 h, whereas 84.6% of patients who did undergo POE had a delay resulting in a TTS greater than 48 h.

DISCUSSION

The results demonstrate that TTS were significantly longer in those patients who were investigated with POE. 84.6% of patients who underwent POE had a TTS greater than 48 h. In comparison, only 15.3% of patients who did not undergo POE had a TTS greater than 48 h.

It has been shown that a delay in SFF of PFF results in increased hospital stay, morbidity and mortality.[2,3] This patient group frequently also have existing comorbid conditions and it is essential to ensure that these patients have been appropriately investigated and optimised prior to surgery. However, the potential delay that investigations may cause needs to be considered against the significant weight of evidence that supports early SFF. The role of POE in this patient group is not the aim of this study, but this study shows that requesting POE in patients with PFF resulted in a delay in TTS that breached national guidelines in our institution in a high income country.

If we are to meet national treatment targets, then appropriately requested POE needs to be sufficiently resourced to prevent any delay in TTS that can adversely impact upon patient outcome.

We are also aware that some of our colleagues in anaesthesia are performing focused POE in an attempt to obtain specific information that can influence peri-operative management whilst reaching a TTS within 48 h and our audit supports this development.

Limitations

We accept that changes have now have occurred such that this audit may not be applicable today in all health-care institutions within the UK health-care system.

We also accept that we cannot state that POE is the sole reason for delay in SFF as there may be other reasons for the delay in SFF that our data collection method did not capture.

CONCLUSIONS

We conclude that during our study period and at our institution, the use of POE in patients with PFF was associated with a delay in SFF that breached national targets and that this association is worthy of further audit and study.

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**Table 1: Time to echocardiogram**

| TTE         | No. of POE | %   |
|-------------|------------|-----|
| <48 h       | 3          | 23.1% |
| 3-5 days    | 7          | 53.8% |
| 6-10 days   | 2          | 15.4% |
| >10 days    | 1          | 7.7%  |

TTE – Time to echocardiogram; No. of POE – Number of pre-operative echocardiograms

**Table 2: Time to surgery**

| TTS          | POE not conducted | POE conducted | %   |
|--------------|--------------------|---------------|-----|
| <48 h        | 182                | 2             | 15.4% |
| 3-5 days     | 23                 | 7             | 53.8% |
| 6-10 days    | 8                  | 3             | 23.1% |
| >10 days     | 2                  | 1             | 7.7%  |
| Total        | 215                | 13            |      |

TTS – Time to surgery; POE – Pre-operative echocardiogram
Anaesthetic considerations in primary repair of tracheobronchial injury following blunt chest trauma in paediatric age group: Experience of two cases

INTRODUCTION
Tracheobronchial injuries (TBIs) are rare among all age groups and are extremely rare among the paediatric age group. Anaesthetic management for repair of TBI thus is a challenge. Management of TBI is well-described by surgical and medical journals,[1,2] but there is a paucity of literature regarding anaesthetic implications and considerations. We share our experience of management of primary repair of TBI following blunt chest trauma.

CASE REPORTS
Case 1
A 14-year-old boy presented in the emergency department with a history of blunt injury to chest (run over by bullock cart) with respiratory insufficiency and episodes of vomiting with frank blood. On examination, child was irritable, tachypneic, with feeble peripheral pulses with features suggestive of left sided pneumothorax. An urgent bedside chest X-ray showed left pneumothorax [Figure 1]. After intercostal drain (ICD) insertion at 5th intercostal space his saturation improved to 95%. Continuous air leak was noticed through ICD tube and computerised tomography (CT) thorax revealed left main bronchus distal portion tear with severe collapse of the left lung ('fallen lung sign'), left subclavian artery complete thrombosis with suspicious injury to left inferior pulmonary vein. Laboratory investigations revealed Bombay O blood group, haemoglobin = 9.3 g/dl, haematocrit = 25.6, other blood and urine investigations were normal. Though CT scan showed subclavian artery thrombosis, clinically there were no signs of ischaemia of limb and also radial and ulnar artery pulsations were felt moderately. Thus, patient was started on heparin 2500 IU empirically.

An immediate diagnostic bronchoscopy and posterolateral thoracotomy was planned. Written informed high-risk consent was taken. In the operating room, pre-operative vitals were heart rate = 112/min, blood pressure = 96/60 mmHg, SpO₂ = 95% with O₂ support. After pre-oxygenation, patient was pre-medicated with intravenous glycopyrrolate 0.2 mg and fentanyl 40 μg. The patient’s trachea was intubated with a 6-mm cuffed single lumen endotracheal tube (ETT) after induction with thiopental sodium and succinylcholine. Complete transection of the left main bronchus was confirmed with fibre optic bronchoscopy (FOB) and right endobronchial intubation and one lung ventilation (OLV) was achieved. Anaesthesia was maintained with isoflurane in 100% O₂ and atracurium. Once bronchial transection repaired, ETT was pulled out of right bronchus and placed above the carina, both lungs ventilated saturation of 98-99% ensured. Post-repair, no air leak noticed with positive pressure ventilation and patient was extubated after confirming adequate respiratory efforts. Follow-up chest X-ray showed incomplete expansion of the left lung due to underlying contusion. ICD removed on 11th post-operative day. Child was discharged after 12 days.