Review Article

The importance of a daily multi-disciplinary team meeting in the management of patients with thoracic trauma

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Abstract: The multi-disciplinary team (MDT) meeting is well utilised in many areas of medical practice and is established in thoracic oncology. The MDT with a group of relevant specialists allows for a full discussion with the aim of ensuring efficient and streamlined patient care which benefits from all relevant expertise. There is often the need for complex discussions that are needed to benefit care—often required with the more involved and complex patients. Management of thoracic trauma is frequently non-operative and presents with other non-thoracic injuries—both requiring collaborative and interdisciplinary working. Whilst team meetings and MDT are of course established in trauma generally we outline the benefits of adopting a formal thoracic trauma MDT. There is of course a very key difference in trauma as opposed to oncology—those patients present unplanned with a need for particularly expedient decision-making. We therefore propose a daily meeting to discuss how patient care can be progressed. The exact make up of such a meeting may sometimes vary but it is our view that with daily discussion with patients with chest injuries there will be significant patient benefit—allowing for progression of care, rapid treatment of other injuries and the overall co-ordination of care toward discharge and rehabilitation.

Keywords: Multi-disciplinary team (MDT); thoracic trauma; chest wall trauma

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Introduction

The management of patients who have suffered major trauma and sustained multiple injuries present an often-complex challenge with early decision making and management from a wide range of medical specialists frequently required (1). The combination of various injuries, that each with its own potential ramifications and complications, frequently mandates a comprehensive but flexible management strategy that ultimately extends beyond the expertise of a single medical specialty (2). Furthermore, given the sudden and unexpected disruption to the patients' life, other input such as psychological, rehabilitative and social support is often needed. It is within this context that the concept of multidisciplinary meetings has particular use for expedient decision making, recognised as crucial in trauma generally, and for facilitating a holistic and collaborative management approach (3).

Of course, generally the importance of multi-disciplinary

team (MDT) working lies in the ability to bridge the gaps that often exist between both different medical specialties and the wider clinical team. This is particularly apparent in major thoracic trauma of which teams such as our own are extensively involved in providing care from patient admission to discharge, both within the trauma centre but also the wider region. As such an MDT can hold a pivotal role in ensuring that no aspect of a patient's complex condition goes unnoticed or untreated. The patient discussion, and exchange of ideas during these meetings facilitates a comprehensive assessment of the patient's injuries, taking into account the interplay between various injuries but also the wider psycho-social implications, and consideration of potential complications—with the aim of course of trying to both minimise these but respond robustly as they occur to minimise morbidity and mortality.

The management of thoracic trauma incorporates surgical intervention but is frequently non-operative (4). For the patient presenting with chest trauma, either in isolation or with other injuries, there is great variability as to the pathway that can follow. Patients can be assessed in the emergency department environment which depending on location could be a major trauma centre or a trauma unit. The decision at this point is likely to include seeking specialist advice or input. Referrals in such significant numbers can be difficult to manage and we have addressed this using an electronic referral platform. What follows is yet to be well defined and fully elucidated on a national and international level. Admission location can vary with many factors involved in this. Moving towards a streamlined pathway in complex healthcare systems will not be straightforward but should certainly pursued if patient benefits can be sought.

In routine clinical practice we know that decisions requiring specialist input from different clinical teams can take time with delays made in patient care which of course in the setting of chest trauma can impact overall outcomes. It is our view that the multidisciplinary approach provides a safe and sustainable tool in addressing this issue. Obviously, timescales for meetings have to be balanced with the need for decisions to be made but also acknowledging the appropriate use of resources which in this setting is mainly the professional time required. We aim to highlight the challenges that may be encountered from this manner of working but to suggest how this approach may lead to improved patient outcomes, reduced levels of morbidity and mortality rates, and an overall improvement of the patient experience.

MDT proposal

Composition of the MDT

Patients are often admitted under one specialty who have overall responsibility for the patients care whilst other relevant specialties provide input as needed. Patients who have sustained thoracic trauma or multiple injuries in which the thoracic trauma pre-dominates may be admitted under the thoracic surgeon. However, there is of course as already mentioned great variability in this—other admitting specialties can vary widely including general and orthopaedic surgery, medical teams and anaesthetist managed areas. This is not the only area in the care pathway in which there is so much variability. The patient who has poly trauma can well be admitted under a non-thoracic surgical specialty despite having significant chest injuries. The challenge is therefore the appropriate identification of patients for which timely specialist input is required and ensuring their care is directed as such.

It is our opinion that a daily thoracic trauma MDT should ideally be in a hybrid form. This facilitates maximum attendance appreciating that key members may well be offsite, or time constraints may be eased when joining online is an option. A core group would incorporate medical colleagues—a thoracic surgeon, trauma surgeon, anaesthetist and medical/elderly physician; allied health colleagues including nursing representation and physiotherapy, and colleagues who are able to input into the wider holistic care—occupational therapists and psychologists. The wider membership would include those whose input may provide very beneficial for decision making and progression of care but are likely to be required on a daily basis—neuro, general and orthopaedic surgeons typically to plan complex operative care.

Criteria for discussion in the MDT meeting

There can be strong argument made to discuss all inpatient cases on a daily basis given the very significant likelihood of changes in condition and the major objective to ensure positive progression. The argument against this would be the time required and if this is out-balanced by benefit from reviewing cases on a regular and consistent basis. However, there are clearly specific scenarios and situations where discussion is to be welcomed and beneficial. Realistically once the patient presents to the emergency department the key aspects that should happen automatically would be review in the department by the medical and surgical teams

as required, referral and assessment for potential surgical stabilisation of rib fractures, and insertion of a regional anaesthesia pain block—i.e., these aspects should not wait for the next MDT. The situation certainly to be avoided in any patient with chest injuries is a prolonged stay in the department on a trolley whilst care is deliberated and early referral to MDT should be made.

Despite the patient having been admitted, there is benefit to be gained from discussing were they are being cared for and ensuring it is the right location for the best outcome. What is not yet fully known is regarding how injury pattern may affect the location in which the patient is admitted. There are of course typical scenarios of the patient admitted with isolated rib fractures; the patient admitted with isolated rib fractures requiring chest drainage; the multiply injured patient; and the impact of age on these scenarios—indeed the definition of elderly is debatable and varies. Frailty may be more important but would require careful assessment that is unlikely to happen during the admission process (5). It is also of course worth considering if admission is actually required or if discharge and appropriate follow-up would be the better option. The factors relating to discharge often relate to medical, physiotherapy and nursing issues and so can be discussed in this forum to ensure that hospital length of stay is not unnecessarily extended.

Elderly patients admitted with blunt thoracic trauma are known to be associated with significant morbidity and mortality (6). This is an area that often instigates significant debate and will continue to do so. It can be argued that a surgical ward, under the care of a surgeon, is not the best place to deal with complex medical and potentially social needs. Conversely medical wards are not always equipped to deal with the wider needs such as post-surgical patients, or those with epidurals or other forms of regional pain block. Specifically, this is a group of patients were there is clear benefit for the insertion of a regional pain block (erector spinae and serratus anterior) (7). Analgesia is always concerning with multiple factors often contributing to a complex picture. Elderly patients may be unable for various reasons to express that they are in pain which can be inadequately addressed—of course both pain and medications used to treat it can contribute to delirium (8). There are potentially issues with all systemic medications—opiods can contribute to hypotension, falls, delirium and excessive sedation with extra care needed for those with renal impairment. Non-steroidal anti-inflammatory drugs may not be suitable given pre-existing renal or heart failure or gastro intestinal bleeding—things of relatively high incidence in this patient cohort. It is the recommendation learnt from our practice that in the elderly patient serratus anterior and erector spinae blocks ought to be considered the standard of care (7). However, the limiting factor for this is ensuring the appropriate skill mix at any given time. There is also the important consideration that needs to be made regarding anti-coagulation for various reasons especially if an operation is required and how it should be managed through the peri-operative period.

There are then the complex surgical patients that perhaps require multi-specialty operating, staged operating or simply advice from another surgical specialty before an operation can proceed (9). There are specific examples that in practice can actually result in significant prolongation of decision making and delays in care. The patient with combined rib fractures and spinal fractures is a typical scenario often creating debate (10). There is emerging evidence in this area, but it is not uncommon for the thoracic surgeon to raise concerns regarding positioning of the patient and the potential for neurological compromise whilst the neurosurgeon will raise concerns about proning the patient to enable spinal fixation (11). It is not the intention to argue which is right and wrong but to obtain a view that allows for the patients care to progress. Without an MDT there can be delays that are extensive whilst the key decision makers are sought. There are also likely in this scenario to be questions from the nursing team that can be addressed early and comprehensively. Of course, being in a position to mobilise these patients following surgical management is what is sought to provide chest complications but if communication is not clear then patients can be left in bed unnecessarily despite successful surgical intervention (11).

There are often occasions where allied health professionals need to discuss and raise important questions or seek clarity on the management plan. The longstanding medical advice in patients with chest injuries is not untypically—'intensive chest physiotherapy', regular nebulisers, repeat chest radiograph tomorrow or earlier if deteriorates. Whilst clinically physiotherapy is rightly recognised as crucial and key in the management of patients with chest trauma there has actually not been an abundance of evidence to support its use. Battle *et al.* have recently published important recommendations in this area that are helpful to ensure optimal care (12). In addition to this though the MDT environment can help address questions that may occur and can lead to pauses in a patients' treatment. One scenario, that is fairly common clinically, is

the patient with a pneumothorax who would benefit from positive pressure treatment. Frequently physiotherapists raise concerns regarding this, but discussions can ensure a safe treatment plan with provision made in case of deterioration.

Role and responsibilities of members

As with any multi-disciplinary meeting there is of course a principal requirement to ensure it is well led, and co-ordinated with appropriate administration support. The need for an organised approach is not to be understated to ensure that the meeting incorporates the patients who need it, addresses the appropriate questions and queries for each patient and is then clearly documented and communicated to those who are caring for the patient.

Like most meetings it is important that there are those in attendance that actually know the patient so that meaningful discussion can take place and the issues addressed. There should also be a regular representation from each of the core members which should be considered non-negotiable. In an area such as trauma there are frequently many factors that need to be considered in progressing care. The young patient who has sustained self-inflicted poly trauma with a need for complex surgical intervention—however this patient, with capacity, is refusing any surgical intervention—a clearly very difficult situation but one that will only be addressed by a team approach with the relevant psychological support. Of course, the patient scenarios are endless highlighting the need for full representation so that well informed discussions can take place.

Ensuring and maintaining standards

There is of course a continued evolution in the way in which patients are managed even with guidance from an MDT. It is important that members involved in each aspect of the patient care continue in the manner of improving the service and with it patient outcomes. General thoughts from our practice are that for the elderly patient, as discussed, there is a clear need for a multi-disciplinary approach and development of an elderly trauma service. Shared decision making is an important and expanding aspect of medical care and is likely to have a particular role in the management of thoracic trauma in the elderly. For the surgeon who is wishing to proceed with surgery in the patient with complex co-morbidity a decision made jointly by surgeon and physician can help ensure a comprehensive plan is in place—addressing the management of co-morbidity and anti-coagulation through the peri-operative period. There may of course be situations were invasive intervention is not in the patients best interest or not what they desire and so should be managed carefully, sensitively and holistically.

Potential impact and follow up strategies

The impact of streamlining thoracic trauma pathways is not to be underestimated—the numbers of patients sustaining major trauma are considerable and there are significant levels of associated mortality (13). There has previously been acknowledgment that delays in patient care can lead to impaired outcomes (14). Whilst lifesaving intervention should of course not wait for an MDT, the crucial role is for delays to be minimised and prevented as care moves forward with an active plan towards discharge and rehabilitation. The MDT is particularly useful, just as in other areas such as cancer treatment, for managing complex cases (15).

Another key area that requires careful thought and further clarity is the issue of follow-up. Surgical follow-up following surgical stabilisation of rib fractures is recognised to vary widely. The picture is potentially further complicated as to those who have been managed non-operatively. There is of course a huge range here—the patient who presents to the emergency department and is discharged early to the multiply injured major trauma patient who spends a significant period in hospital. What the optimal approach is for follow up is not clear. There is of course the increasing importance of patient reported outcomes and we recently outlined the need for increased emphasis on this. Baker *et al.* following investigation emphasised that functioning and chronic pain should not be underestimated (16). With the numbers of patients suffering chest trauma the implications of this are very significant both on an individual basis but also to society.

Just as an MDT in cancer ensures patients receive appropriate ongoing care and follow-up, the MDT in thoracic trauma should have a similar role (15). Recognising that a standard follow-up is useful in ensuring consistency and preventing patients being 'lost to follow up', there is actually a paucity of evidence in terms of follow-up from thoracic trauma. The timeframe for follow-up and who should undertake this is not clear. It would seem a sensible approach to personalise this depending on the injuries, the patients' current condition and likely prognosis but of course this is involved and requires significant co-ordination

which an MDT can provide.

The whole non-operative thoracic trauma care pathway is clearly complex and further work in this area will require input from a wide variety of stakeholders (17). This potentially includes surgical societies, allied health professional societies and perhaps overall co-ordination from a society that is specifically focused on the management of patients with chest injuries—such as the Chest Wall Injury Society (CWIS). Our unit is a CWIS Collaborative Centre and of course collaboration between units in this area is important as in any area of medicine to learn best practice and adopt it into practice accordingly.

Conclusions

Thoracic trauma is associated with risks of morbidity and mortality that are not negligible. The presentation of the patient with chest injuries requires rapid but considered decision making in a bid to optimise outcomes. The pathways for thoracic trauma are varied and not well-defined. This can result in different approaches to management with a significant likelihood of delays for complex decision for which there is a concern this itself could be reflected in differential outcomes. We feel that one important aspect in ensuring uniformly high standards is the adoption of a daily thoracic trauma MDT.

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Footnote

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