32nd INTERNATIONAL
PAK ORTHOCON
2018
Extending Standard Musculoskeletal Care to Less Privileged Areas

بسم الله الرحمن الرحيم

Planned Upper limb Trauma

پاکستان اک عشق اک جنوں

Walsall Learning Centre
EXCELLENCE IN PROFESSIONAL TUITION

32nd INTERNATIONAL
PAK ORTHOCON
2018
Extending Standard Musculoskeletal Care to Less Privileged Areas

Planned Upper limb Trauma

Disclosure

Consultant for Lima
Consultant for Arthrex EMEA
Consultant for Lavander Medical
Consultant For Stryker
Consultant For Orthospace

Planned Upper limb Trauma

In a survey conducted by McQueen, only 8.3% of British orthopaedic surgeons cited trauma as their primary interest despite 80% of those surveyed being on a regular trauma rota

Court-Brown C, McQueen MM. Trauma management in the United Kingdom. J Bone Joint Surg Br 1997; 79: 1–3.

32nd INTERNATIONAL
PAK ORTHOCON
2018
Extending Standard Musculoskeletal Care to Less Privileged Areas

Planned Upper limb Trauma

The wide scope of orthopaedic trauma means that surgeons may encounter difficulty when faced with complex cases unfamiliar to them as part of their elective practice

Court-Brown C, McQueen MM. Trauma management in the United Kingdom. J Bone Joint Surg Br 1997; 79: 1–3.

Walsall Learning Centre

32nd INTERNATIONAL
PAK ORTHOCON
2018
Extending Standard Musculoskeletal Care to Less Privileged Areas

Planned Upper limb Trauma

Trauma operations are often performed by more junior consultants or unsupervised orthopaedic specialist trainees, which may increase the chance of complications and long-term cost to the health service.

Court-Brown C, McQueen MM. Trauma management in the United Kingdom. J Bone Joint Surg Br 1997; 79: 1–3.

Walsall Learning Centre
EXCELLENCE IN PROFESSIONAL TUITION

Hub & Spoke

Measures have been taken to improve the care of poly traumatised patients by the introduction of regional trauma Centres

Best Practice tariff

Patients with hip fractures are also streamlined by the implementation of best practice tariffs and the national hip fracture database

32nd INTERNATIONAL
PAK ORTHOCON
2018
Extending Standard Musculoskeletal Care to Less Privileged Areas

Isolated Upper limb Trauma

The management of isolated musculoskeletal injuries still poses a major challenge to the NHS

Walsall Learning Centre
EXCELLENCE IN PROFESSIONAL TUITION

32nd INTERNATIONAL
PAK ORTHOCON
2018
Extending Standard Musculoskeletal Care to Less Privileged Areas

Isolated Upper limb Trauma

Epidemiologic studies have shown upper limb fractures, particularly of the carpus and forearm, to be the most common isolated musculoskeletal injuries encountered in the UK.

Donaldson LJ, Reckless IP,Scholes S et al.The epidemiology of fractures in England. J Epidemiol Community Health 2008; 62: 174–80.

Walsall Learning Centre
EXCELLENCE IN PROFESSIONAL TUITION

Isolated Upper limb Trauma

However, they do not have the same implications for mortality as spinal, pelvic, hip or long bone diaphyseal fractures, or the same priority as paediatric injuries.

European working Time rules

Together with the decreased operating time available and the European Working Time Regulations, adults with upper limb orthopaedic trauma requiring surgery may have to wait behind higher priority cases.

Audit

An intra- departmental audit demonstrated this picture in our trust with patient dissatisfaction particularly due to cancellations, long hospital stays and lack of continuity of care.

Changes

This led to a structural change within our department. A dedicated 1 session , semi- elective upper limb trauma list was introduced with the aim of improving patient satisfaction and efficiency and reducing hospital stay

EULTL

The elective upper limb trauma list (EULTL) was run in addition to the traditional trauma lists .
Surgery is performed in laminar flow theatre

EULTL

The EULTL is consultant-led with 2 upper limb surgeons MS & WG who both have a specialist interest in elective and trauma surgery of the upper extremity.
All surgery is performed by or directly supervised by a consultant.

EULTL

Patients are recruited via the fracture clinic or via referral of complex cases by other orthopaedic teams within the trust.

Any further preoperative investigations are performed on the same day or arranged in the time before surgery.

EULTL

MRSA swabs are taken and anaesthetic pre-assessment is arranged if necessary.

Logistical management of the list with regard to patient booking, reservation of overnight beds and ordering of specific equipment or implants is done by Trauma Coordinator.

EULTL

No extra staff are required to run the EULTL. Paediatric patients or those requiring emergent intervention are not operated on on the EULTL.

Comparison

A comparison with the concurrent management of upper limb adult trauma on the pre-existing GTLs during a four- month period between September 2017 and February 2018 was performed.

Criteria

The criteria for comparison were theatre time utilisation, length of hospital stay, cancellation/postponement rate and patient satisfaction.

Results

The results were collated and statistical analysis was performed.

Categorical variables and baseline demographic data are described using frequencies and percentages.

Results

Continuous variables with a symmetric distribution are presented as means with standard deviations (SD). Non-parametric testing (Mann–Whitney U test) was performed to establish the difference between groups with the level of significance set at 0.05.

Results

24 Available lists for EULTL
224 available lists for GTL

There were 57 operations on 57 patients on the EULTL and 470 operations on 466 patients on the GTL

Results

Hence, the mean number of cases dealt with per list was 2.1 on the GTL and 2.4 on the EULTL.

Thirty per cent (140/470) of operations on the GTL were adult upper limb cases.

Only these patients were used in the comparison between the two lists. One patient had surgery on both lists.

Results

DISTRIBUTION OF CASES ON EULTL AND GTL

*'Other' includes metalwork removal, foreign body removal, abscess incision and drainage

Results

Hence, the mean number of cases dealt with per list was 2.1 on the GTL and 2.4 on the EULTL.

Thirty per cent (140/470) of operations on the GTL were adult upper limb cases.

Only these patients were used in the comparison between the two lists. One patient had surgery on both lists.

Results

The mean patient age on the GTL (51.3 years, SD: 26.1) was significantly higher (p=0.03) than on the EULTL (44.0 years, SD: 20.1).

The mean patient American Society of Anaesthesiologists (ASA) score was also significantly higher (p=0.01) on the GTL (1.7, SD: 0.8) than on the EULTL (1.4, SD: 0.6).

Results

The mean time to surgery from the date of injury was significantly higher ($p<0.01$) on the EULTL (7.3 days, SD: 1.8) than on the GTL (3.5 days, SD: 3.1).

The mean theatre time utilisation of the EULTL was 89% compared to 68% on the GTL.

Results

The mean length of stay of patients on the EULTL (0.12 nights, SD: 0.3) was significantly lower ($p<0.01$) than on the GTL (2.30 nights, SD: 1.6).

When patients with medical or social problems were excluded from the GTL (n=50), the mean length of stay was still significantly higher ($p<0.01$) (1.7 nights, SD: 1.1).

Results

Overall, 89% of medically and socially fit patients received surgery on a day-case basis on the EULTL compared to 48% on the GTL.

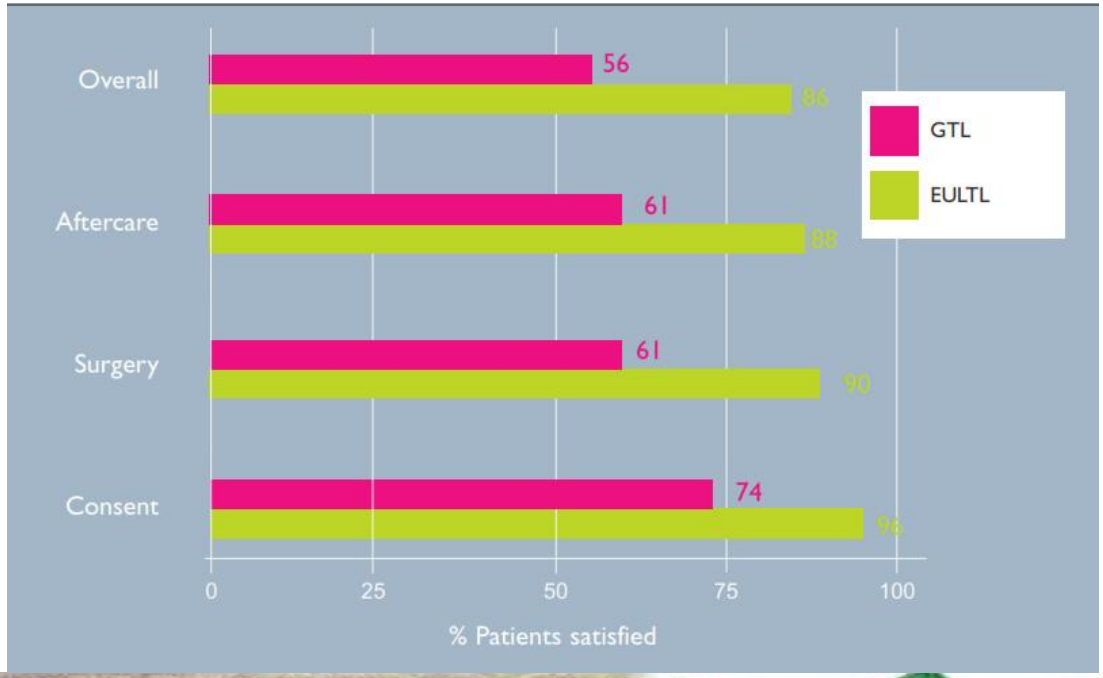
On the EULTL one patient was cancelled as opposed to 25 (18%) postponements on the GTL.

Survey

A total of 50 (88%) patients from the EULTL and 113 (81%) from the GTL were contactable and willing to participate in the patient satisfaction survey.

Survey

RESULTS OF PATIENT SATISFACTION SURVEY



Survey

PARTICULAR AREAS OF PATIENT DISSATISFACTION

Unsatisfactory area	GTL (*n*=113) Frequency	GTL (*n*=113) Per cent surveyed	EULTL (*n*=50) Frequency	EULTL (*n*=50) Per cent surveyed
Delay/cancellation of surgery	13	11.5	1	2.0
Lack of communication	7	6.2	1	2.0
Cosmetic/functional result	6	5.3	1	2.0
Nursing care	5	4.4	0	0.0
Inadequate physiotherapy/ occupational therapy follow-up	3	2.7	0	0.0
Pain management	2	1.8	2	4.0
Different doctor performing surgery	1	0.9	0	0.0
Total	**37**		**5**	

Savings

In monetary terms, if a night in hospital costs the trust an arbitrary 100 units (assuming that the daytime running costs of each list are equal), the mean cost per EULTL patient was 12 units as opposed to 230 units for all GTL patients and 170 units for the medically fit group.

Savings

This equates to a cost saving of 95% and 93% respectively in favour of the EULTL against the two GTL groups.

Stay

The longer stay in hospital of the medically fit GTL group is explained by the higher postponement rate on the GTL.

It was difficult to show accurately why surgery for each individual patient was cancelled/postponed.

Stay

Anecdotally, we found the main reasons to be lack of theatre time and unavailability of appropriate surgical expertise.

Results

The mean time to surgery on the EULTL was higher than on the GTL (7.3 vs 3.5 days).

This is because EULTL patients were dealt with on an outpatient basis and usually given a slot for surgery the following week.

Results

This increased time to surgery was not negatively reflected in the patient satisfaction survey.

In fact, patients appear to prefer to be given a planned date in the near future, allowing them to organise work and home commitments rather than face admission on the general orthopaedic ward without certainty of when surgery is to be performed or who will be performing it.

Training

Aside from the advantages of efficiency and patient satisfaction, we feel that the EULTL also provides better experience for the orthopaedic trainees involved in the lists, both in terms of surgical and management experience (list coordination).

Training

This is because of a controlled, calm environment that is not always available in emergency theatres, and the repetition of and focus on a more specific area of trauma.

Critique

A drawback of our study was that we did not specifically measure patient outcome in terms of function, return to work, etc.

This was not a primary goal of the study but a future audit of outcomes between the two lists would be interesting.

Reproducible

I feel that the EULTL model is reproducible in other areas of trauma.

We now have a dedicated lower limb list with similar parameters.

Efficient

The government drive for cost saving and quality maintenance may at times seem counterintuitive but we feel the streamlining of trauma care as shown in our study satisfies both criterion

Efficient

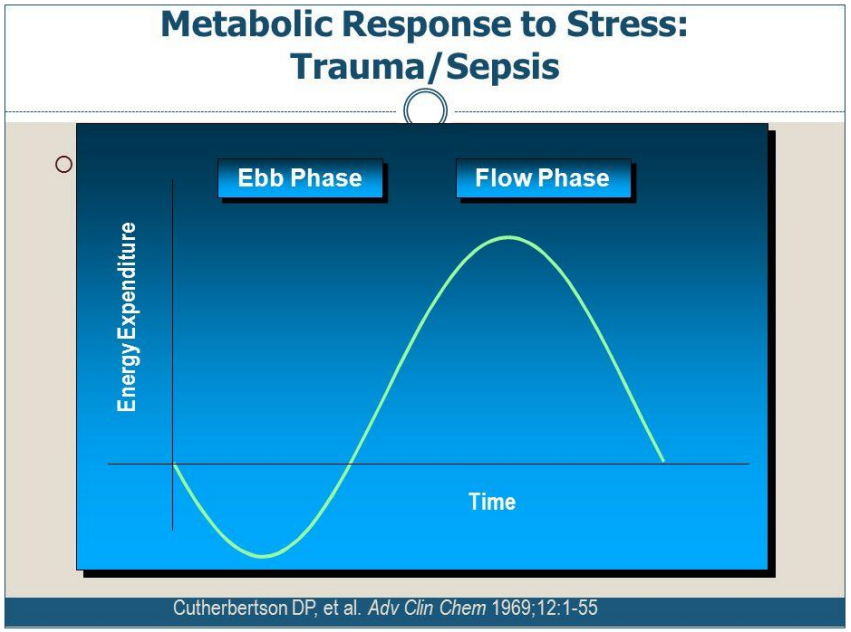
Our study has shown the superiority of planned upper limb trauma care in terms of efficiency and patient satisfaction as well as a likely benefit in terms of cost, training and quality of surgery.

Recommendation

We would highly recommend this system of upper limb trauma provision to other hospitals / trusts with a heavy trauma workload as a readily transferable model of high quality patient care.

Done

Ebb & Flow phase

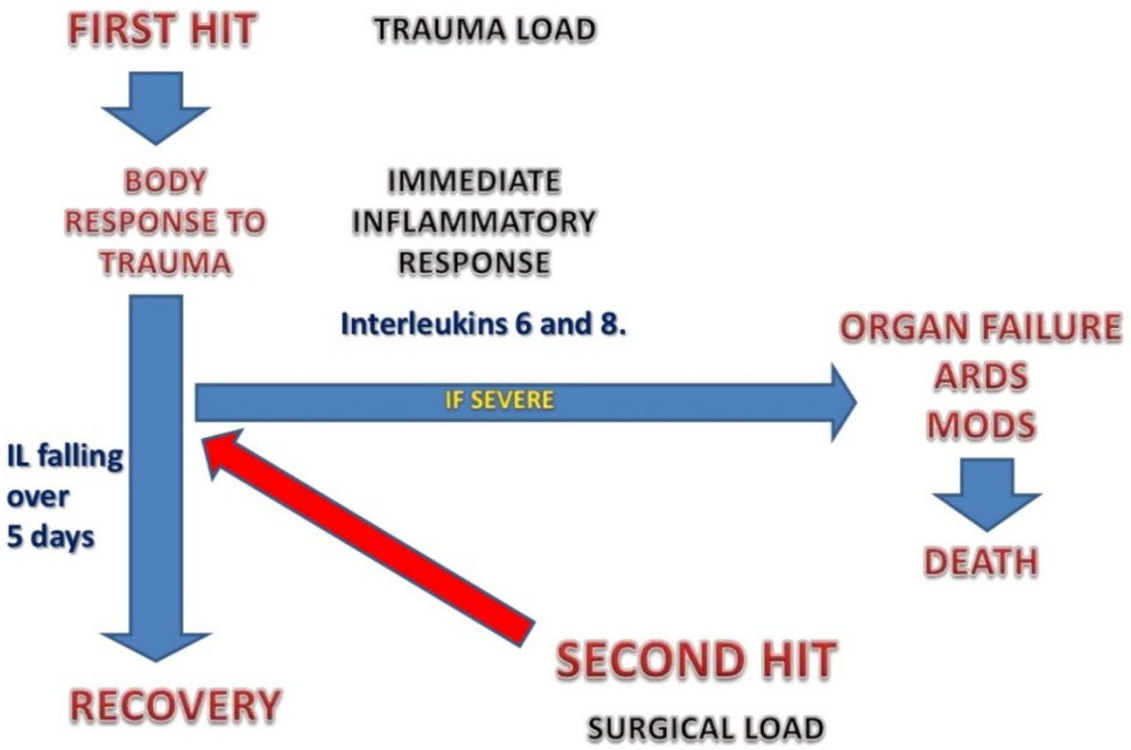


Ebb & Flow phase

Ebb and Flow

Phase	Duration	Role	Physiological	Hormones
Ebb	<24 hrs	Maintenance of blood volume, catecholamines	Dec BMR, Dec temp, Dec O2 consump, vasoconst, Inc CO, Inc heart rate, acute phase proteins	Catechol, Cortisol, aldosterone
Flow				
Catabolic	3 – 10 days	Maintenance of energy	Inc BMR, inc Temp, inc O2 consump, -ve N2 balance	Inc. Insulin, Glucagon, Cortisol, Catechol but insulin resistance
Anabolic (MOORE)	10 – 60 days	Replacement of lost tissue	+ve Nitrogen balance	Growth hormone, IGF

2nd Hit



2nd Hit

Pathological immune response

IMBALANCE BETWEEN SIRS AND CARS

Severe injury → 1st Hit → **Intense CARS** Early MODS/death

Moderate Injury → 1st Hit → Incomplete Resolution → 2nd Hit → *2nd Operation within D3-5* *Sepsis* → **Amplification of SIRS** Delayed-onset MODS/death