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STUDY ON THE AVAILABILITY AND UTILISATION OF PLASTIC SURGERY SERVICES IN THE MANAGEMENT OF OPEN FRACTURES IN INDIA.

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WHY THIS STUDY ?

Management of an open fracture with soft tissue defect still remains a challenging problem for a trauma surgeon. Till the beginning of this century such an injury was life threatening. In a series published at that time, of the 93 patients with open fractures, mostly of the lower extremity, 40% of them died and 30% resulted in limb amputation. The advent of antibiotics and principles of wound care solved many problems that were life threatening but still we have not solved problems which are limb threatening.

The morbidity that is associated with the management of open fractures could be minimised if reliable soft tissue cover is given early and infection prevented. The improvement in results rely on two factors.

1) Time elapsed since injury and when the treatment starts.
2) Presence or absence of infection when the plastic surgeon starts the reconstructive process.

For both these factors Plastic Surgeon must form part of the initial team treating the patient. Presently, this is not so. Everyone is in agreement that in the management of an open fracture with soft tissue defect, reconstruction of soft tissues is not possible without rigid fixation of the skeleton and the fractures would not unite without adequate soft tissue cover. But the agreement stops there. In practice the co-operation between the Orthopaedic Surgeons and Plastic Surgeons to achieve this goal doesn't exist. This problem is not a unique one to developing countries which have poor infrastructure or lack of adequately trained personnel. Team work in the treatment of complex compound fractures is still an exception even in the developed parts of the world.

'A Report by British Orthopaedic Association/ British Association of Plastic Surgeons working party on the Management of Open Tibial Fractures September 1997', published in the British Journal of Plastic Surgery (1997) Vol-50,570-583 mentioned that the study was initially undertaken because in the management of open fractures, " the surgical practice frequently fell short of acceptable standards". The report further said "Unfortunately, optimal management is still not uniformly practiced throughout the United Kingdom".

While even developed countries are seized with this problem, where do we stand in India? The first problem is that we do not have data. To know the magnitude of a problem, and to find lasting solutions, we need data and the opinion of the people involved. This study is designed to get them.

In 1991, a speciality centre for Trauma was established at Ganga Hospital, Coimbatore where co-operation between the Plastic Surgeons and Orthopaedic Surgeons yeilded superior results. Gradually we attracted visitors, both Orthopaedic Surgeons and Plastic Surgeons from both teaching hospitals and non teaching hospitals, practising in metropolitan cities as well as mofussil institutions. All of them during their visit appreciated the results achieved and the advantage of combined work. But they always said that they did not have this collaboration in their set up. This was even if a plastic surgeon was available in their centre/place. So that led us to think, why should a scientifically proven fact not be put into practice. While everyone would agree during a discussion, that co-operation between the two specialities would benefit the patient, but do not put this into practice, then there must be something wrong and it deserves correction. It could be a problem of aptitude or attitude and the problem must lie with both the specialities. This study is to find out those problems and solutions if possible.

Study partly financed by the Venture Fund of Association of Plastic Surgeons of India - 1998 - 99

WHY WAS THIS STUDY DONE THROUGH THE VENTURE FUND OF THE APSI ?

If this study was done as part of the activities of the Association of Plastic Surgeons of India, it will underscore to every one, that the Association is willing to recognise the needful growth in this area. Hence a proposal was submitted to the Executive Committee and the General Body of the Association of Plastic Surgeons of India at the Annual Meeting in Calcutta in 1998 and a token sum of Rs.5,000/- was sanctioned to undertake the study.

THE METHODOLOGY OF THE STUDY

A questionnaire was designed for the Orthopaedic surgeons, to seek information about the the Plastic Surgical services available to the individual in the management of open fractures. In case it available, but not utilised, the reasons for the san The questionnaire for the Plastic Surgeons w designed to find out about the percentage of th involvement in the management of open fractur in their day to day work. It sought their opini about the existing levels of co-operation betwe their Orthopaedic Collegues and if it w unfavourable, what they thought were the reasor This questionnaire was sent to all the members the Association of Plastic Surgeons of India ar the members of the Indian Orthopaedi Association. A reply-paid envelope was als enclosed to facilitate reply. An accompanying lett introducing the problem and the object of the stuc was sent along the questionnaire. Specimen copie of the questionnaire are given below.

PLASTIC SURGERY

On trial it was found that it takes 7 minutes on an average to fill this questionnaire. Please spare this time

QUESTIONNAIRE FOR ASSESSING THE AVAILABILITY AND UTILIZATION OF PLASTIC SURGEONS IN THE MANAGEMENT OF OPEN FRACTURES

1. Name

2. Age

3. Address

Phone Nos

Fax No

E-mail

Pincode ☐☐☐☐☐☐

We assure you that the information provided will be kept confidential. If you want to be anonymous, please omit items - 1to3

4. Qualifications

5. Years since Plastic Surgical Qualification

6. Type of Practice | Private | Institutional | Both |

7. Are you actively involved in the Management of Open Fractures? | Yes | No |

8. If the answer is "No", why are you not involved?

   i. That is not my field of interest in Plastic Surgery

   ii. I am busy with other work (Burns, Cleft Lip etc)

   iii. I don't like to take emergencies / Can't keep on doing it at my age

   iv. Remuneration inadequate for the efforts taken

   v. Infrastructural facilities inadequate to perform (O T time, Anaesthesiologist's services)

9. Do you feel that you are adequately trained to meet the demands of soft tissue coverage in the management of Open Fractures? | Yes | No |

10. If the answer is 'No', what aspect of training do you find lacking?
    i. Basic initial care including debridement
    ii. Conventional methods of cover (Ex; Muscle flaps like soleus, different fasciocutaneous and reverse flow flaps)
    iii. Micro Surgery
    iv. Awareness of advances in Orthopaedics

11. During your training period, at the centre of your training (M.Ch or DNB), was there good co-operation between the Orthopaedic & Plastic Surgery departments in the management of Open Fractures? | Yes | No |

12. If the answer is "No", what do you think is the cause?

13. What percentage of your work is related to the management of Open Fractures?
    i. Below 10%
    ii. 10 to 20%
    iii. 20 to 30%
    iv. More than 30%

14. How many cases of Open Fractures needing soft tissue cover do you treat in a fortnight? (Just think of the last few weeks operating list)

15. What is the usual time of referral of Open Fractures to you? Please give percentages under various headings.
    i. Immediate
    ii. Few days
    iii. Few weeks
    iv. After a month

16. What do you think are the causes of late referral?
    i. Lack of awareness of usefulness of Plastic Surgery
    ii. Non-availability of Plastic Surgeons at the time of need
    iii. Financial reasons
    iv. Ego of Specialists

17. What are your suggestions to bring abount increased co-operation between Orthopaedic Surgeons and Plastic Surgeons? (Use extra sheet if you feel necessary)

ORTHO

On trial it was found that it takes 7 minutes on average to fill this questionnaire. Please spare this tir

QUESTIONNAIRE FOR ASSESSING THE AVAILABILITY AND UTILIZATION OF PLASTIC SURGEONS IN THE MANAGEMENT OF OPEN FRACTURES

1. Name
2. Age
3. Address
   Phone Nos
   Fax No
   E-mail

Pincode ☐☐☐☐☐☐

We assure you that the information provided will be kept confidential. If you want to be anonymous, please omit items -

4. Qualifications
5. Years since Orthopaedic Qualification
6. Type of Practice — Private | Institutional | Both
7. What percentage of your work involves the management of open fractures requiring soft tissues coverage? — < 5% | 5-10% | 10-20% | Above 2(
8. How many cases of Open Fractures needing soft tissue cover do you treat in a fortnight? (Just think of the last few weeks operating list)
9. Are you working in close co-ordination with Plastic Surgeons in the Open Fracture Management? — Yes | No
10. If the response to question number 9 is "Yes", please select one of the following
    i. Plastic Surgeon is involved in all cases
    ii. Plastic Surgeon is called for specific problem cases.
    iii. Plastic Surgeon is called if the primary procedure does not give the desired result
11. If the response to question number 9 is "No", please select the appropriate responses. Pl Surgeon is not regularly involved because
    i. Plastic Surgeon is not available in the centre / city
    ii. Available Plastic Surgeon is not interested in trauma care
    iii. Plastic Surgeon is not available in emergency situations
    iv. I feel regular involvement of Plastic Surgeon is unnecessary - "Need to be called if only primary procedure fails"
    v. Plastic Surgery procedures make the treatment expensive
12. In the Institution of your training (MS, DNB) was there close co-operation between the Orthopaedic and Plastic Surgery departments in the management of Open Fractures?
13. If the response to question number 12 is "NO", the reasons in your opinion are
    i. There was no Plastic Surgery Department
    ii. Plastic Surgeons were busy with other work
    iii. Department Heads did not believe in co-ordinated work
    iv. Others - Please specify
14. Are you convinced that close co-operation between the two departments will improve the result of treatment of Open fractures? — Yes | No | Not S
15. Do you have any suggestions for increasing the co-operation between the two departmen (Use extra sheet if you feel necessary)

RESULTS

406 Orthopaedic Surgeons and 163 Plastic Surgeons responded by filling in the questionnaire. The responses were from all over the country and covered all age groups. The places of responses from the orthopaedicsurgeons is given in Table I and that of plastic surgeons is given in Table II. The computed results of the responses are given below. Some have responded positively to more than one option for some questions. It will explain the discrepancy in the total number. These results were analysed and the results presented and discussed.

TABLE - I

PLACES OF ORTHOPAEDIC SURGERY RESPONSES

1)	Adoni	44)	Eluru	87)	Latur	130)	Pune
2)	Agra	45)	Erode	88)	Lucknow	131)	Puthur
3)	Ahmedabad	46)	Faridabad	89)	Ludhiana	132)	Raebareli
4)	Akola	47)	Farukhabad	90)	Machilipatnam	133)	Raipur
5)	Alappuzha	48)	Gadag	91)	Madurai	134)	Rajapalayam
6)	Aligarh	49)	Gandhidham	92)	Malappuram	135)	Rajkot
7)	Allahabad	50)	Gaya	93)	Mangalore	136)	Ranchi
8)	Amalapuram	51)	Ghaziabad	94)	Manipal	137)	Raopura
9)	Amaravati	52)	Goa	95)	Mavelikara	138)	Rathinagiri
10)	Amritsar	53)	Gobi	96)	Mayiladuthurai	139)	Rourkela
11)	Anantapur	54)	Godhra	97)	Meerut	140)	Saharanpur
12)	Azamgarh	55)	Gulbarga	98)	Mehsana	141)	Salem
13)	Bangalore	56)	Guntur	99)	Miraj	142)	Sangli
14)	Bareilly	57)	Gwalior	100)	Moodbidri	143)	Satara
15)	Baroda	58)	Haridwar	101)	Mooradabad	144)	Shimla
16)	Belgaum	59)	Hissar	102)	Munger	145)	Shillong
17)	Bellary	60)	Hassan	103)	Muzafarnagar	146)	Sikar
18)	Bhiwani	61)	Honnavar	104)	Muzafarpur	147)	Solapur
19)	Bhijapur	62)	Hooghly	105)	Mysore	148)	Sonepat
20)	Bodinayakanur	63)	Hubli	106)	Nagerkoil	149)	Srinagar
21)	Mumbai	64)	Hyderabad	107)	Nagpur	150)	Sultanpur
22)	Calcutta	65)	Ichalkaranji	108)	Najibabad	151)	Sundargarh
23)	Calicut	66)	Idar	109)	Nanded	152)	Surat
24)	Cambay	67)	Iduki	110)	Nandurbar	153)	Thalessery
25)	Chandigarh	68)	Indore	111)	Nanganallur	154)	Thane
26)	Channapatna	69)	Jabalpur	112)	Narmad	155)	Tanjore
27)	Chidambaram	70)	Jaipur	113)	Nasik	156)	Tirupati
28)	Chikmangalur	71)	Jalgaon	114)	Mau	157)	Trichur
29)	Chennai	72)	Jalandhar	115)	Navsari	158)	Trichy
30)	Cochin	73)	Jammu	116)	Nellore	159)	Trivandrum
31)	Coimbatore	74)	Jhansi	117)	Palakkad	160)	Tumkur
32)	Coorg	75)	Jodhpur	118)	Palani	161)	Udumalpet
33)	Cuddalore	76)	Junagarh	119)	Palanpur	162)	Udupi
34)	Cuddapah	77)	Kannur	120)	Paldi	163)	Vapi
35)	Cuttack	78)	Kanpur	121)	Pannaikadu	164)	Varanasi
36)	Damoh	79)	Karad	122)	Pathankot	165)	Vellore
37)	Davangere	80)	Karaikal	123)	Patiala	166)	Veravel
38)	New Delhi	81)	Karnal	124)	Patna	167)	Vijayawada
39)	Dhanbad	82)	Karwar	125)	Perinthalmanna	168)	Visnagar
40)	Dharwad	83)	Kota	126)	Pilibhit	169)	Vizag
41)	Dhenkanal	84)	Kothagudem	127)	Pollachi	170)	Yamunanagar
42)	Dhule	85)	Kottayam	128)	Pondicherry	171)	Yavatmal (Maha)
43)	Dibrugarh	86)	Kumbakonam	129)	Porbandar		

From some cities, we have had many responses e.g. 32 from Mumbai, 17 from Ahmedabad etc.

TABLE - II

PLACES OF PLASTIC SURGERY RESPONSES

1)	Agra	23)	Dena	45)	Mysore
2)	Ahmedabad	24)	Dharwad	46)	Nagpur
3)	Aligarh	25)	Ghaziabad	47)	New Delhi
4)	Alipore	26)	Gwalior	48)	Noida
5)	Amritsar	27)	Hariyana	49)	Pathankot
6)	Ananthapur	28)	Hubli	50)	Patna
7)	Angamaly	29)	Hyderabad	51)	Pondicherry
8)	Ankola	30)	Indore	52)	Pune
9)	Annamalai Ngr	31)	Jaipur	53)	Rajkot
10)	Aurangabad	32)	Jalandar	54)	Ramnagar
11)	Bangalore	33)	Jamshedpur	55)	Ranchi
12)	Baroda	34)	Kakinada	56)	Rohtak
13)	Behrampur	35)	Kanpur	57)	Secunderabad
14)	Bhopal	36)	Karaikal	58)	Shillong
15)	Calcutta	37)	Lucknow	59)	Solapur
16)	Chandigarh	38)	Ludhiana	60)	Surat
17)	Chennai	39)	Madurai	61)	Tanjore
18)	Cochin	40)	Mangalore	62)	Trichy
19)	Coimbatore	41)	Manipal	63)	Trivandrum
20)	Cuttack	42)	Miraj	64)	Varanasi
21)	Davanagiri	43)	Mukerigang (UP)	65)	Vijayawada
22)	Dehradun	44)	Mumbai	66)	Vizag

From some cities, we have had many responses E.g. 21 from Mumbai, 13 from Chennai etc.

The most interesting and useful column for the study was the enthusiasm with which people had responded to the last question, where their suggestions had been invited. Many of them had written long paragraphs due to their earnest desire to see an improvement. It is not possible to put all the views individually but their views and ideas have been well represented under the recommendations column.

ANALYSIS OF THE RESULTS - PLASTIC SURGERY RESPONSES

Total Number : 163

1. MBBS : 163 MS : 163 M Ch : 160

2. Years since Plastic Surgical Qualification

a) Within 5 Years : 27
b) Within 5-10 Years : 42
c) Within 11-15 Years : 28
d) Within 16-20 Years : 15
e) Within 21-25 Years : 13
f) Above 25 Years : 38

3. Type of Practice

a) Private : 43
b) Institution : 41
c) Both : 79

These figures by themselves are not useful fo analysis but they have been very useful to analys the responses to other questions by finding ou the relationship of age and the type of practice.

4. Active Involvement in Management of Ope Injuries.

Yes : 105	No : 58

Subsequent responses of people answering, 'No

i. Not my field of interest in Plastic Surgery : 5
ii. I am busy with Burns, Cleft Lip etc. : 1
iii. Can't keep on doing it at my age : 6
iv. Remuneration inadequate for the efforts : 2
v. Infrastructure facilities inadequate : 4
vi. Can't depend on this to be the main source of work : 34
vii. Such patients are not referred to me : 43

58 of the 163 people who responded are no involved in the management of open fractures This is 36% of the total responses i.e., more tha 1/3 of the Plastic Surgeons are not involved i managing open fractures. It might be thought tha this 36% would belong to the elder generation because it could be presumed that with advancin age people tend to go away from the mor

demanding acute reconstructions of major trauma. But it is not so. There are equal number of people within 10 years of starting their practice as much as people who are over 20 years of practice. Most of the younger generation plastic surgeons responded to the column that patients with the open fractures are not referred to them.

5. Do you feel that you are adequately trained to meet the demands of soft tissue coverage in the Management of Open Fractures ?

Yes : 131	No : 32

Subsequent responses of people answering, 'No'.

i. Basic initial care including debridement : 0
ii. Conventional methods of cover (Muscle flaps like soleus, fasciocutaneous & reverse flow flaps) : 5
iii. Micro Surgery : 27
iv. Awareness of advances in Orthopaedics : 6

32 Plastic Surgeons (20%) expressed that they feel insufficient in their training for the management of open fractures. Most of them were within 10 years of qualification and 27 of them said that their main deficiency was in the field of Micro Surgery. Of the people who said they have been adequately trained, i.e., 132 out of 163, majority of them do not do micro surgery. But they feel they are able to manage the demands of open fracture management even without microsurgical techniques. All are comfortable about debridement.

6) During your training period, was there good co-operation between Orthopaedics & Plastic Surgery Departments in the management of Open Fractures.

Yes : 109	No : 54

Subsequent responses of people answering 'No'

i. Open fracture management was not considered as important : 16
ii. Department Heads didn't believe in co-ordinated work : 34
iii. Other reasons : 18

54 out of 163 i.e., 1/3 of the Plastic Surgeons said that there was no co-operation between the Orthopaedic and Plastic Surgery departments in the management of open fractures. The most important reason was that the department heads did not believe in co-ordinated work. Personal ego was stated as another common reason. Surgeons who get trained in these institutions find themselves wanting when they go out to practice. Some have commented that cleft lip and palate, hypospadias occupied more teaching time and operating time than management of limb trauma. The incidence of cleft lip and palate is 1/750 live births and the incidence of hypospadias is 1/300 live male births. But when compared to this, the number of cases of trauma needing plastic surgical expertise is enormous and almost reaches epidemic proportions. Judging by the needs of the society, all plastic surgery departments should concentrate in this field also. After all the growth of any speciality depends upon satisfying the needs of the society and we need to do radical changes to correct this imbalance.

7) What percentage of your work is related to Management of Open Fractures?

a. Below 10% : 75
b. 10 - 20% : 42
c. 20 - 30% : 33
d. Above 30% : 8

8) How many cases of Open Fractures needing Soft Tissue Cover do you treat in a fortnight ?

a. Below 5 : 142
b. 5 - 10 : 16
c. Above 10 : 5

The responses where the work represented more than 30%, were from major institutions. 70% of plastic surgeons, treat only one or two cases of open fractures in a month.

9) What is the usual time of referral of Open Fractures to you ? Please give percentages under various headings.

a. Immediate
   i. Below 25% : 131
   ii. 25 - 50% : 16
   iii. 50 - 75% : 4
   iv. 75 - 100% : 12
b. Few Days
   i. Below 25% : 89
   ii. 25 - 50% : 30
   iii. 50 - 75% : 3
   iv. 75 - 100% : 41
c. Few Weeks
   i. Below 25% : 118
   ii. 25 - 50% : 20
   iii. 50 - 75% : 1
   iv. 75 - 100% : 24
d. After a Month
   i. Below 25% : 134
   ii. 25 - 50% : 9
   iii. 50 - 75% : 1
   iv. 75 - 100% : 19

7% of the plastic surgeons get more than 75% of the open fractures referred immediately. 24% of the plastic surgeons get more than 75% of their cases after a few weeks or months. It is this ratio that we want to change. More number of plastic surgeons must get to see more open fractures immediately.

10) What do you think are the causes for late referral ?

a) Lack of awareness of usefulness of Plastic Surgery : 114
b) Non-availability of Plastic Surgeons in time : 19
c) Financial reasons : 46
d) Ego of Specialists : 81

The responses are self-explanatory.

ANALYSIS OF THE RESULTS - ORTHOPAEDIC SURGERY RESPONSES

Total Numbers : 406

1. MBBS : 406 MS : 405 M Ch : 54

2. Years since Orthopaedic Surgical Qualification

a) Within 5 Years : 3
b) Within 10 Years : 54
c) Within 15 Years : 100
d) Within 20 Years : 103
e) Within 25 Years : 59
f) Above 25 Years : 87

3. Type of Practice

a) Private : 204
b) Institution : 78
c) Both : 124

The number of people within 5 years of qualification is very less. May be it reflects the age profile of the members of the Indian Orthopaedic Association.

4. What percentage of your work involves the management of open fractures requiring soft tissue coverage ?

a) < 5% : 120
b) 5 - 10% : 146
c) 10 - 20% : 85
d) Above 20% : 48

5) How many cases of open fractures needing soft tissue cover do you treat in a fortnight ? (An average value in private practice set up).

People working in institutions naturally have that they see more number of open fractures. an average, a private Orthopaedic Surgeon one to two open fractures which require soft ti cover in a fortnight.

6. Are you working in close co-operation v Plastic Surgeons in the Open Fract Management ?

Yes : 231

Subsequent responses of people answering, 'Y

i. Plastic Surgeon is involved in all cases :
ii. Plastic Surgeon is called for specific cases : 1
iii. Plastic Surgeon is called if the primary procedure doesn't give desired results : 2

No : 175

Subsequent responses of people answering, 'N

i. Plastic Surgeon is not available in the city/centre : 1(
ii. Available plastic surgeon is not interested in trauma : 1
iii. Plastic Surgeon is not available in emergency situations : 4
iv. I feel regular involvement of Plastic Surgeon is not necessary. Need to be called only if primary procedure fails : 4
v. Plastic surgery procedures make treatment expensive : 4

Only 9% of the Orthopaedic Surgeons involve th Plastic Surgeon for the treatment of all their ope fractures. There is a great tendency to do th primary procedure by themselves. These response have been analysed under the recommendation section.

7) In the Institution of your training, was there close co-ordination between Orthopaedics and Plastic Surgery Departments in the Management of Open fractures ?

Yes : 217 | No : 189

Subsequent responses of people answering, 'No'

i. There was no Plastic Surgery department : 66
ii. Plastic Surgeons were busy with other work : 60
iii. Department heads didn't believe in co-operation : 56
iv. Others : 26

189 out of 406 i.e. 47% of the Orthopaedic Surgeons have been trained without the benefits of seeing the results of close co-operation. That almost amounts to half the responses. 66 (16%) of total Orthopaedic Surgeons have been trained where no Plastic Surgery department existed. That perhaps is very difficult to correct. But what is worrying is the other 123 responses where a plastic surgery department existed but still no co-ordinated work was done. It will lead to inadequate exposure of the orthopaedic trainees and insuffcient clinical load for plastic surgical training.

8. Are you convinced that close co-operation between the two departments will improve the result of treatment of open fractures?

Yes : 382	No : 13	Not sure : 11

The study reveals that though 94% of the orthopaedic surgeons participating in the study, are convinced that co-operation is necessary, only 57% work with plastic surgeons and only 9% involve the plastic surgeon in all their cases.

RECOMMENDATIONS

1) Collaboration between Orthopaedic Surgeons and Plastic Surgeons must start in teaching institutions, "Professors must lead by example".

Teachers have a great role to play in determining the way their students practice after qualifying. If due to personal bias, ego clashes or due to inadequate confidence, the heads of departments do not work together in treating open fractures, students do not get an opportunity to evaluate the results of collaboration.

The study reveals that many senior members of the profession who head prestigious institutions have replied that they do not believe in collaborative effort or it is non-existent in their institutions due to various reasons. When such "Opinion makers" do not believe in a well proven concept, it is possible that a whole generation of students may go through without exposure to a medical advance.

This lacuna in training becomes obvious for the student when he starts his practice. This is the main suggestion expressed by Plastic Surgeons and Orthopaedic Surgeons who have put in less than 10 years of practice. They feel that if collaboration starts in all the teaching hospitals, as it should, by 'trickle down effect', it will become a norm.

During analysis, it was found, that if an orthopaedic surgeon or a plastic surgeon is trained in an institution where there was no co-operation, the practice continued when they went out to practice.

2) Inter Department Training during post graduate course must become part of the curriculum.

Many Orthopaedic Surgeons (70 responses) have suggested that atleast 6 months must be spent in a Plastic Surgical Unit during their M.S. course. Though sparing 6 months may be impractical, nevertheless some time could be spent in a plastic surgical unit. This suggestion becomes stronger in people who are practicing in non metropolitan cities. It shows the need that they face in their day to day practice. Similarly it would do good for a Plastic Surgeon to spend atleast one month in an Orthopaedic Unit so that they get the basic ideas of the current concepts in fracture management.

3) Acute open fracture treatment must be considered as an important aspect of plastic surgical training.

Soft tissue coverage of defects in the lower limb exposing the fracture site no doubt forms part of M.Ch teaching curriculum. It involves many teaching sessions and definitely forms part of the M.Ch examinations. But most of the work done is not in the acute stage. If the Plastic Surgeon is willing to become part of the team at the time of debridement, no matter, whatever time of the day the patient is taken up for surgery, the situation will definetely improve. The main complaint of the Orthopaedic Surgeons has been that, the available Plastic Surgeon is not interested in emergencies and expressed that this 'white collar attitude' of the plastic surgeons must go. The results will be better if the plastic surgeon took the responsibilities of wound care primarily. The wounds could be debrided under magnification. Secondly he will understand the nature of injury so that, local damage to muscles and their blood supply, perforator status, degree of skin degloving are also assessed to help in proper flap selection. This is possible only when the part is examined under anaesthesia before bony stabilisation.

The decision making process in the coverage of soft tissues in the acute stage defers so much from doing it electively after few months. Unless a Plastic Surgeon is trained for it, he fails in his initial attempts to gain the confidence of the local Orthopaedic Surgeon.

Constraints of operating time and manpower are the stated reasons for this failure by the Plastic Surgeons. But it still does not absolve the Plastic Surgeons of their responsibilities. It is their failure

to meet the needs of the society in this aspect. It calls for greater manpower planning and organisational efforts on the part of the Plastic Surgeons. This deficiency is more felt by the Orthopaedic Surgeons in North India and in the Eastern sector, perhaps coinciding with the distribution of plastic surgeons in this country.

4) Micro Surgical Training must become easier to obtain

27 of the 163 responses in the Plastic Surgery felt their training for treating open fractures with soft tissue loss inadequate, since they do not have micro surgical training. It does not mean, the rest of the people who responded are practicing micro-surgery. Non micro surgical techniques and micro surgical techniques each have their role to play and having micro surgical skill gives the surgeon wider and better options. While very few plastic surgeons have commented requesting this facility, more number of orthopaedic surgeons have commented about the lack of this training in their available plastic surgeon. To claim that all compound fractures must be treated by the plastic surgeon, they should also raise up their level of competency.

5) Where both speciality services are available, collaboration must increase

Analysing the response of the Plastic Surgeons about the time of referral of open fractures, it is found that only 7% of Plastic Surgeons get ALL the cases referred to them immediately and 24% of the Plastic Surgeons get ALL their cases only after few weeks or months. This has got a message. It shows that only in very few centres, total co-operation exists. When all cases are done together the rapport between the two teams increases, better results are achieved and cost also comes down. When cases are referred, only after few months or after a failed primary attempt by the Orthopaedic Surgeon, suboptimal results are achieved inspite of the best of efforts. This scenario causes dissatisfaction in the minds of the orthopaedic surgeon and the patient about the role of the plastic surgeon. When one is handed over only difficult problems, it is not a good method to assess the value of a technique. The Plastic Surgeon also needs numbers to pick up experience. Doing all cases together, is probably the best way to achieve good results.

6) Where Plastic Surgery services are not available, educate the Orthopaedic Surgeon to do what is possible and to understand his limitations

25% of the Orthopaedic Surgeons have expressed that they do not have Plastic Surgical services in their city. Remedying this is not possible in the near future. Most of them handle about one to two such cases in a month and it is possible that these patients do not get the ideal treatment. Most of these surgeons have requested for training for doing gastrocnemius flaps, rotation flaps and fasciocutaneous flaps.

While training the orthopaedic surgeon would benefit the local population, there is a risk that the indications for these techniques could be stretched by the Orthopaedic Surgeon in the absence of his capability of doing additional procedures. This could raise a debate and a solution midway must be found.

7) One Assistant Professor post in every Orthopaedic department could be occupied by a Plastic Surgeon.

48 out of 406 responses, said that more than 20% of their work involves management of open fractures requiring soft tissue coverage and almost all of them are from big institutions. If you add up the people who had responded where the work is over 10%, the number becomes 133 out of 406. If a Plastic Surgeon is officially a part of the Orthopaedic team, co-ordinated open fracture management will become the norm rather than an exception. It will educate all the orthopaedic trainees about the value of early soft tissue cover. The Plastic Surgeon must be well trained and competent since this is a demanding sub-speciality and he has the responsibility of showing successful results and convincing the trainees of the need for co-operation.

This recommendation may raise many eyebrows and discussions. But achieving that will be an ultimate goal. It will help to solve many problems, optimally utilize the available bed strength and will be a great financial saver for the society.

In our country when major polytrauma hospitals are planned, surprisingly provision for plastic surgery department is not made. Even health care man power planners are unaware of the contribution plastic surgeons could do for trauma care in the acute stage. The Association of Plastic Surgeons of India must take it as one of its responsibilities to spread the message.

8) Combined treatment mustn't become expensive to the patient.

One of the fears expressed by the Orthopaedic Surgeons, (10% in responses and 60% in

suggestions) is that combined treatment might become expensive to the patient. This is a very valid point in a developing country like India where social security net is poor or non existent. If all the cases are done together, the rapport established between the Orthopaedic and Plastic Surgeons will definitely spread over in fees sharing also. It is an accepted fact that if one is presented only with problem cases with difficult options, cost becomes higher.

It has been proved that combined treatment is cost effective. Economic cost of a wound breakdown far exceeds the savings made by non-cooperation. This is a short sighted economy and is to be avoided. Plastic surgeons and the Association must take efforts to drive home the point of cost effectiveness of early cover, both to Orthopaedic Surgeons and to the public. Increasing the public awareness of the role of the plastic surgeon in open fracture management will help to solve the problem. No one minds paying for good services rendered, which is thought as essential. The challenge is to make the Orthopaedic Surgeon and the patient understand the needs of plastic surgery services. Public awareness about the services of Plastic Surgeons in limb salvage is very poor and needs to be corrected.

9) How to bring about the change? Association of Plastic Surgeons of India and Indian orthopaedic association must conduct regular courses on open fracture treatment.

This course would be of immense benefit to the fresh trainees and must be conducted in a professional manner in centres, where this collaboration exists. Two centres could be chosen one in the North and another in South which would conduct these courses semi-annually. The curriculum for this course could include the basic sciences pertaining to mechanism and response to major injury, basic principles of fracture fixations in the presence of soft tissue loss and the basic principles of soft tissue coverage in demanding situations. The core content of the course could be the same, year after year with minor modifications to incorporate the recent advances that would come. This need not be a very high profile course but should be a basic course which gives an opportunity for a fresh trainee to have access to information and benefit from the collated experience of busy centres. This could be very much like micro surgical courses or basic skill developmental courses for laparoscopy.

20% of the people who responded have recommended this idea. An Orthopaedic surgeon & Plastic surgeon from the same area can attend the course together which could help them to establish an useful relationship.

TO CONCLUDE

When the proposal for this project was mooted, it was received with more pessimism and doubts about what it could achieve. There were even doubts whether we would get any responses at all. But the replies were encouraging. I am sure that at least in the minds of those who replied some thoughts on this problem would have been triggered.

It is hoped to circulate this report to all the people who matter. It is certain that some improvement will take place. The increased awareness of the problem should be followed up by positive actions to get lasting solutions. As the first step, it is proposed to hold a basic course on compound injuries management at Coimbatore in the coming year, and start a micro-surgical lab for training interested surgeons.

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