

# SURGERY IN A TEMPORARY SETUP- SHARING AN EXPERIENCE OF 16 MONTHS

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## ABSTRACT

This descriptive study was carried out at Combined Military Hospital Muzaffarabad after the earthquake of October 2005 over a period of 16 months when the hospital was functioning under canvas. The workload that this hospital has managed over the period despite running under tents has been highlighted. Emphasis is laid upon the importance of basic sterilization techniques, which, if followed religiously, stand good in preventing postoperative infection under compromised working conditions as well. A total of 2887 major and 7471 minor surgical procedures pertaining to the specialty of General Surgery, Orthopedics, ENT, EYE and Gynecology were carried out over a period of 16 months. Though the load was comparable to any 'C' class and most of the 'B' class hospitals, despite being under tents, there was not a single case of post operative infection. The importance of single-use-only surgical disposables in the good management of surgical patients has also been highlighted.

**Keywords:** Tent Hospital, Surgery Under Canvas, Single-Use-Only Hospital Disposables

## INTRODUCTION

On October 8th, 2005 an earthquake with intensity of 7.6 on Richter scale, the most destructive in the history of Pakistan, hit its Northern areas including Azad Jammu & Kashmir. The epicenter of the earthquake was just 10 Km North of Muzaffarabad. The worst hit cities were Muzaffarabad, Bagh, Rawalakot and Balakot. The only tertiary care hospital in Muzaffarabad was Combined Military Hospital (CMH) that collapsed completely with no structure standing. 37 staff personnel's including two lady doctors and three nurses were crushed to death. Some minor surgical instruments retrieved from the rebel were used for the minor dressings and stitching of the wounds but the amount of destruction and suffering was unmatched. A team of French doctors together with the remaining staff of CMH established a tent hospital at location of CMH Muzaffarabad. Later an American surgical team arrived with Mobile Army Surgical Hospital (MASH) and they, with assistance of CMH staff established another tent hospital at another place around 5 kilometers away from CMH. These two teams, supported by staff of CMH, started working day and night for taking care of the suffering and the poor. In

addition to these two major temporary setups few other minor setups were established by volunteers from all over the world.

Despite all adversities CMH was never left unmanned for a single day. After the French and Americans left, the CMH staff took over these tent setups and continued serving the wretched in their best humble capacity. Initially the operation theatre setup was patchy with very little capability for surgery as the setup was made to deal with emergencies only, stabilize them and refer them to better facilities. Later a lot of major modifications were carried out within available resources and MASH was disassembled from its original location, modified and redesigned by incorporating it into the French tent hospital and was re-established near the old location of CMH. This modified canvas hospital (with elements of MASH, French hospital and left over of CMH) started working in February 07. This setup had one operating room fabricated inside a container whereas postoperative care, intensive care and wards were all under the canvas. As our outpatient workload took off from 200-300 post earthquake to 1700-1800 per day with in a span of one year. Our operation theatre setup was felt insufficient to meet the ever increasing surgical load and so another operation theatre was fabricated and incorporated into the original setup. Though a lot of efforts were made to get whatever possible this was a

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temporary setup and consisted of two containerized operating rooms with instruments sterilization, postoperative recovery, wards and offices all in tents. The hospital is still working under the same circumstances awaiting reconstruction of new concrete hospital which is on its way. The study was carried out to share our experience of working under peculiar conditions for a period of time that may be the longest in the history of any temporary/tent hospital setup.

## **MATERIALS AND METHODS**

This descriptive study was carried out at combined military hospital Muzaffarabad from February 2007 till July 2008 over a period of 16 months. All patients who underwent surgery at CMH Muzaffarabad were included in the study. Patients of both sexes and all age groups were included. All cases that were already infected at the time of surgery were excluded from the study. Recommendations of Infection Control Committee and hospital Standing Orders and Procedures were strictly followed to alleviate all chances of postoperative wound infection. Infection control committee exists in every Military Hospital; anesthetist, pathologist, senior surgeon and operation theatre sister in charge were the members of this committee. At the time of establishment of MASH American doctors brought with them a huge load of surgical disposable items. These Single-use-only surgical disposables were used to decrease the chances of postoperative infection. The data was compiled and analyzed at the end of 16 months.

## **RESULTS**

The work carried out during the study period of 16 months is shown in tables 1-2. It is worth mentioning that during this period of 16 months and despite all the workload on the operation theatre none of our cases got postoperative infection. This was also depicted in the quarterly Infection Control Committee report.

## **DISCUSSION**

Setting up of a hospital under canvas is not a new concept and is being practiced since

long. Mostly it is being done for short periods of time, during war or war like conditions or as relief medical camps<sup>1-3</sup>. MASH has been utilized exclusively as emergency and field hospital by the American Army<sup>4-6</sup>. Our experience of working in a tent hospital was unique in a way that this hospital has been working under the canvas for probably the longest period of time in the history of surgery (CMH Muzaffarabad is still working under tents as the new hospital is being constructed) and taking good care of both civilian and military patients. Though this hospital was established to meet with emergencies only but soon we started cold surgery as well. Presently all sorts of surgeries are being done here including ENT, EYE, Orthopedics and gynecology. This hospital is still working as a leading major hospital for population of Muzaffarabad district, receiving referrals 24 hrs a day from all over the district<sup>7,8</sup>. In fact it is the only hospital working in the district where ENT, orthopedics and trauma surgery is being done and the work load is evident from the tables provided.

When we started operating on cold cases and especially when orthopedic and eye surgery was added to our facility the major concern was that working under canvas may lead to an unacceptable rate of postoperative infection. We took all possible measures to take care of sterilization and disinfection inside operation theatre. It included good disinfection/sterilization of surgical instruments, use of hospital single-use-only disposable items wherever possible and good training of medical staff. It is worth mentioning that none of our clean cases developed postoperative infection which is comparable to any good setup working anywhere in the world. It is worth mentioning here that though we have been working under the canvas in adverse conditions we had the facility of using state of the art medical equipment and a large load of surgical disposables left over by the Americans with MASH. This had to play a large part in taking efficient care of our patients and our efforts without this equipment would not have been quite effective the way they were.

## CONCLUSION

The surgical team of CMH Muzaffarabad proved the very old saying “where there is a will there is a way”.

Single use only hospital disposables and state of the art hospital equipment plays a major role in the effective management of surgical patients no matter how much the work load/ adversities and must be provided wherever and whenever possible.

## RECOMMENDATIONS

MASH is a state of the art medical facility in its present shape; it should not be wasted away in stores once the hospital setup of CMH Muzaffarabad is shifted into concrete building in the near future. It has the potential to be modified according to the needs/situations and its utility after the construction of CMH Muzaffarabad is to be decided by the concerned higher authorities.

Single use only surgical disposables play a major role in the prevention of postoperative

infection. Unfortunately we are still stuck to reusable by virtue of our severe financial constraints. However whenever and wherever possible single-use-only surgical disposables should be provided for a better surgical outcome.

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**Table-1: Major Surgical Procedures: (n = 2887)**

| Specialty  | Major Procedures | Percentage |
|------------|------------------|------------|
| Surgery    | 1337             | 46.31%     |
| ENT        | 692              | 23.97%     |
| EYE        | 403              | 13.96%     |
| Gynecology | 455              | 15.76%     |

**Table-2: Minor Surgical Procedures, (n = 7471)**

| Specialty  | Minor Procedures | Percentage |
|------------|------------------|------------|
| Surgery    | 4195             | 56.15%     |
| ENT        | 2854             | 38.20%     |
| EYE        | 354              | 4.74%      |
| Gynecology | 68               | 0.91%      |