

A Plastic Surgery Mission: Personal Experience in Improving Outcomes

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Abstract

Background: Missions organized by international societies and humanitarian organizations play a significant role in saving many patients' lives and improving their quality of life, despite the surrounding frustrating conditions. **Methods:** A team of plastic surgery volunteers was sent to Yemen by the KSHARC. **Results:** A successful mission was performed on 62 patients who underwent surgery, with more than 900 patients examined and receiving appropriate medications. **Conclusion:** Missions in disaster-affected areas are of great importance. The role of missions and humanitarian organizations should be empowered.

Keywords

Missions, Humanitarian Organizations, Plastic Surgery, Natural Disasters, Wars

1. Introduction

Wars, Natural disasters, and trauma can cause major disabilities in millions of people worldwide. Plastic surgery intervention and early reconstruction allow an early back to life with fewer complications and avoidance of permanent deformities. Burns, post-burn sequelae including raw-area coverage through grafts or flaps and contractures, congenital anomalies including congenital hand and hypopadias, trauma, and post-traumatic deformities are the main surgical procedures that require plastic surgery interventions. [1]-[5]

Burns are associated with higher mortality rates, especially in children with major injuries and post-burn deformities. They require considerable effort for reconstruction and rehabilitation. [6]-[10]

Plastic surgery is also concerned with the reconstruction of congenital anomalies, which account for approximately 9% of all surgical interventions. Cleft lip

and palate affects one in 500 - 1000 live births worldwide. Hand anomalies, constriction-band syndrome, and hypospadias also require significant attention for treatment. [11]-[13]

With the help of plastic surgery, many people with disabilities can avoid immense suffering. Developing countries frequently lack the financial and human resources devoted to plastic surgery to meet their needs. [14]-[16]

Missions are services offered by humanitarian organizations and societies to offer medical and surgical aid in a short period of time to those countries or disaster areas with limited access to specialized medicine or experienced persons. The Smile Train, Operation Smile, and RESurge, previously InterPlast, are among over 100 plastic surgery non-profit organizations that were founded to help poor people in developing countries. They also serve cleft lip and palate patients and are concerned with training plastic surgeons. [17]-[20]

The current mission was organized by the King Salman Humanitarian Aid and Relief Center in the Kingdom of Saudi Arabia in collaboration with the local authorities in Almahra Governorate, Yemen, to offer medical and surgical assistance for those patients who need plastic surgery intervention and to cooperate with local government physicians and staff to ensure consistent and sustainable practice.

In this manuscript, one of the operating members reports the success of the mission. Pearls, pitfalls, and recommendations were also discussed. The secondary aim is to encourage plastic surgeons and humanitarian organizations to take a great part in supporting people around the world who are in bad need of plastic and reconstructive services.

2. Patients and Methods

All procedures were performed by general surgery doctors. A Public Awareness Campaign describing the mission started two months in advance, with banners and posters positioned in nearby hospitals and medical centers to invite more patients who need medical and surgical services. During the mission days, many patients who were not listed continued to visit the hospital and were registered for interventions.

Plastic surgery consultants examined all patients who had previously been examined by local doctors to determine the surgical intervention needed.

Careful patient selection is based mainly on procedures that require only one stage, a short-term recovery period, or at least simple interventions after mission completion. Patients who needed microsurgical intervention, multidisciplinary interventions, sophisticated instruments, or more than one stage of reconstruction were given advice and were transferred to centers in nearby countries.

The final screening, patient selection, planning and consent of operations were performed on the first day of the mission involving the whole plastic surgery, dermatology members, and other specialty consultations were done as well.

The selected patients were scheduled for the following five days of the mission.

Surgeries started at 8:00 am and continued until 7:00 pm for five days. Many patients underwent more than one corrective or reconstructive procedure.

Every morning and at the end of the day, surgeons and anesthesiologists performed rounds to ensure the stability of the operated patients and the readiness of the next-day patients. Stable patients were discharged during the follow-up in the outpatient clinic.

At the end of the mission, all operated patients were discharged and given follow-up recommendations and advice for long-term treatment and connections with local doctors. No early post-operative complications occurred in any of the patients until the last day of the mission.

3. Results

A total of 976 patients with plastic surgery and dermatology complaints visited outpatient clinics for either medical or surgical intervention.

Decision-making of all cases aimed at performing reconstructive interventions that did not require a second stage, complementary, or redo procedures.

All scheduled cases were listed according to the operation list, and new cases occurring during the days of the missions were added to the list according to the available time and facilities. Other patients were given instructions to improve their general condition as well as medications, ointments, creams, anti-scar treatments, and multivitamins.

62 patients underwent operation over five days by four plastic surgeons of the team. Some of the cases had been operated on by previous missions to the region with no available or inadequate records.

Some patients simultaneously required more than one procedure at the same time. Twenty reconstructive procedures were performed for 14 patients with different diagnoses (**Table 1**). Nine patients were females, and five patients were males. The mean age was 13.9 years (range, 2 - 35 years). The procedures performed included revisions of the cleft lips, scar revisions or excisions, release of burn contractures, skin grafts, palatal repair, and fistula repair. (**Figure 1**)

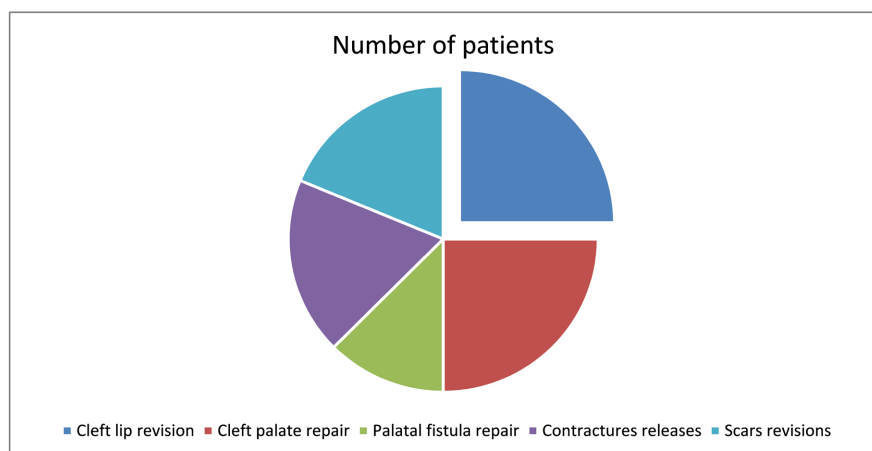


Figure 1. It shows surgical interventions.

Table 1. It shows diagnosis and surgical treatment.

	Sex	Age	Diagnosis	Procedures
1	F	12	Repaired bilateral cleft lip repair	Revision of bilateral cleft lip
2	F	3	Repaired bilateral cleft lip repair Complete cleft hard and soft palate	Revision of bilateral cleft lip repair
3	F	4	Nasolabial Fistula Repaired Bilateral cleft lip	Repair of nasolabial fistula Revision of bilateral cleft lip
4	F	7	Complete cleft palate	Repair of cleft palate
5	M	2	Post-burn contracture of right little finger	Multiple Z-plasty+ FTSG
6	M	28	Sub mandibular scar post-traumatic	Scar revision
7	M	9.5	Complete cleft palate	Repair of cleft palate
8	M	18	Longitudinal check and upper neck scar (post-traumatic)	Scar revision
9	F	20	Post-burn hypertrophic scar of the left thigh	Scar revision
10	F	35	Post-burn abdominal and pelvic scarring restricting movement	Scar revision and abdominoplasty
11	F	3.5	Complete cleft hard palate Soft palatal fistula	Repair of cleft hard palate Repair soft palatal fistula
12	F	22	Post-burn contracted right little and ring fingers Post-burn contracted left little and ring fingers Post-burn contracted left toes (2 nd , 3 rd , 4 th and 5 th)	Release of contractures+ multiple Z-plasty + FTSG+ K wire fixation Release of contractures+ multiple Z-plasty + FTSG+ K wire fixation Release of contractures+ K wire fixation+ STSG
13	F	15	Repaired left cleft lip	Revision cleft lip
14	M	16	Post-burn contracted left hand (loss of fingers and amalgamated hand) Post-burn contracted the first web	Release of amalgamation+ fixation of 5 fingers with K wires+ Z-plasty for left wrist joint+ STSG Release of contracture+ flap closure+ FTSG

All patients were discharged from the hospital within five days (average hospital stay, 2 days). There was no chance for direct post-operative follow-up unless during the mission period. Contact with local doctors was through WhatsApp, where pics were sent and the author sent back recommendations, only for a limited time, two weeks after the end of the mission, as cases no longer visited the outpatient clinic or traveled back home. **Figures 2-9** show pre- and post-operative views.

**Figure 2.** Pre- and post-pics of a patient with bilateral complete cleft upper lip.

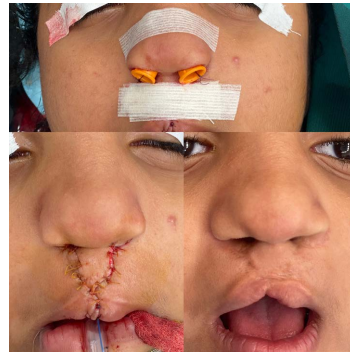


Figure 3. Pre- and post-pics of a patient with revision of bilateral complete cleft lip.

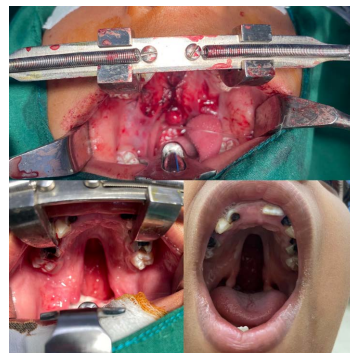


Figure 4. Pre- and post-pics of a patient with incomplete cleft palate.

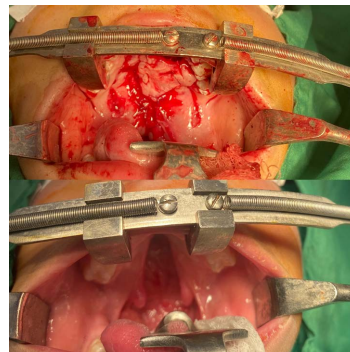


Figure 5. Pre- and post-pics of a patient with incomplete cleft palate.



Figure 6. Pre- and post-pics of a patient with post-burn contracture of the right little finger with release of contractures via multiple Z-plasties and FTSG.



Figure 7. Pre- and post-pics of a patient with post-burn abdominal and pelvic scarring restricting movement, treated by partial scar excision and abdominoplasty with transposition of the old umbilicus.



Figure 8. Pre- and post-pics of a patient with depressed scar in the submandibular region.



Figure 9. Pre- and post-pics of a patient with post-burn contracted left hand (loss of fingers and amalgamated hand), post-burn contracted first web treated by the release of amalgamation + fixation of 5 fingers with K wires+ Z-plasty for left wrist joint + STSG and release of contracture + flap closure + FTSG.

4. Discussion

The provision of health services to people with disabilities worldwide has a significant impact on global health. Plastic surgery plays a significant role in establishing humanitarian aid, especially after the Second World War, with growing efforts. For many years, humanitarian organizations have organized missions to provide surgical interventions for the treatment of burns, trauma, and congenital anomalies. [20]-[25]

In the current mission, volunteers working in the Kingdom of Saudi Arabia were recalled by KSHARC. Consultants in the fields of dermatology, anesthesia, and plastic surgery from KSA, Yemen, and Egypt provided medical treatment and reconstructive procedures, including scar revision, the release of contractures, hand surgeries, cleft lip, cleft palate, and skin grafting.

The working team included four plastic surgery consultants, two anesthesia consultants, two dermatology consultants, two anesthesia technicians, and four scrub nurses, in addition to administrative members. (Figure 10)

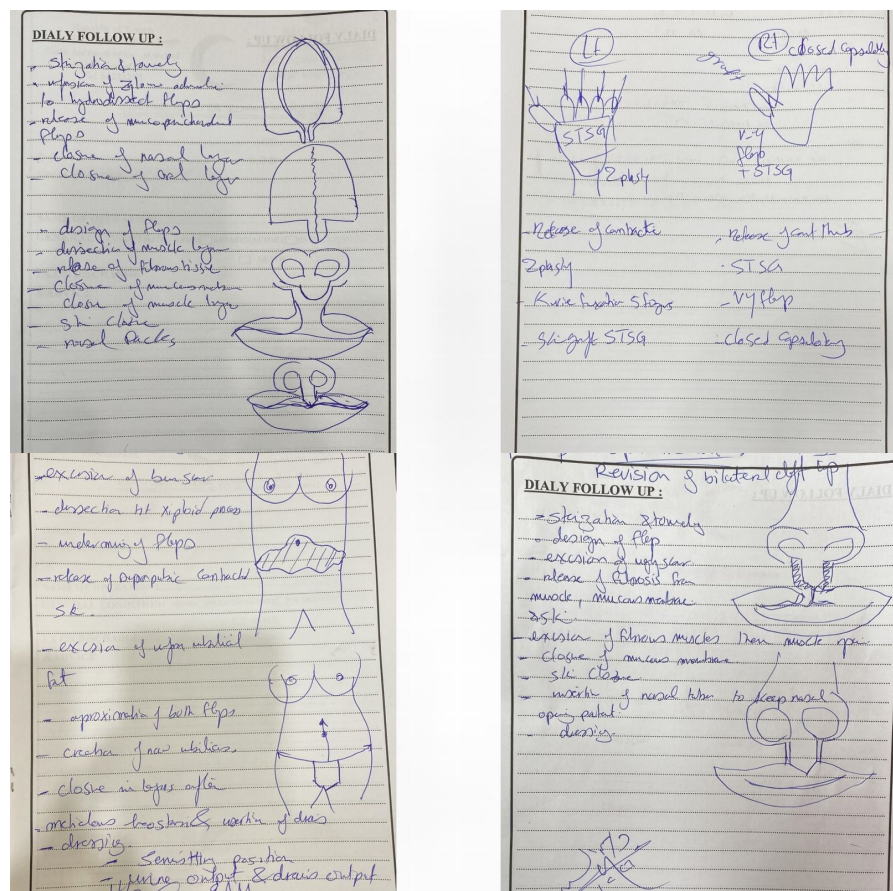


Figure 10. Post-operative details of some patients with simplified drawings for the surgical procedures.

Partnerships between governments and international nonprofit organizations are integral to guaranteeing mission success. [7] [26] [27]

Successful connections between the KSHARC and Yemeni local authorities went well with regard to pre-mission preparations, proper selection of the hospital field, announcements, logistics, consumables, instruments, and the personal safety of the team.

Linguistic, religious, and cultural aspects are of great importance in patient access, with higher success rates when seriously considered. [9]

The selection of members of the team matched well the cultural and religious status of the patients, as all the team members were Arabs, and some were Yemeni citizens with the same cultural background as the Yemeni people, which enhanced the ways of communication and delivered each specific message in a perfect way.

As these disaster areas require many missions to establish a stable and long-life medical service, a well-established system is required to preserve all the mission databases, including patient details, procedures, and financial issues required for follow-up of the patient and as a backup for subsequent missions.

Training local doctors through frequent missions would provide them with great medical and financial support. Training should be done locally to avoid “brain drain,” in which surgeons refuse to return home after completion of their training. [28]-[32]

In the current mission, there were only local general surgery residents, while two other paid foreign Kazakhstani surgeons worked for two years and will leave after their contracts finished, leading to the loss of experienced surgeons and diminished reconstructive capacity of the place. The remaining general surgeons will not be able to provide the required service, and the surgical team will be badly needed to continue the required job. Offering training to local doctors would be a great alternative to overcome the situation.

Training patients about cleft palate care through a discharge sheet significantly improved healing, with a lower incidence of lip wound infections after cleft lip operations. [33] [34]

Patient education was performed as much as possible, mostly with patients or relatives, with the help of local doctors to deliver post-operative recommendations. Instructions about the operation, medications needed, positions, and recommendations were given in person to the patients, as it is expected that all patients will have no chance for post-operative follow-up, and inpatient periods were quite short.

The limitation of this mission was the instability of the situation in the country. There is very limited infrastructure, instruments, and financial resources, limited ways of transportation to the mission location, as well as a lack of skilled plastic surgery doctors. No record system was found for the secondary data retrieval. (Figure 11) There was no possible way to conduct post-operative follow-up.

Guidelines provided by the American Society of Plastic Surgeons in the Plastic and Reconstructive Surgery Journal, published in 2011, are of great importance and should be generalized and upgraded to establish useful worldwide guidelines. [35]



Figure 11. Picture of the mission team with members of the local team, from Saudi Press Agency, on Sunday, 5th of March 2023.

In the future, organizations and societies could help to address more efforts and create new policies to deal with the magnitude of the problems regarding the distribution of hot areas worldwide, quality of cases, financial needs, logistic requirements, and targeting missions.

Large databases of all worldwide plastic surgery missions are required for patient follow-up, redo or 1ry reconstructive procedures. It should be easily accessible to mission members and confidential at the same time. An international mission number for patients should be created worldwide and shared with all organizations for successive missions. Plastic surgery societies should take their part in that part and have a great role in the aid and records to missions that are easily and confidentially shared with mission members at the same time.

Plastic surgery research should concentrate on missions and help in presenting feasible services, yet with insufficient donations, funds, and a limited number of volunteers. [34]

5. Conclusions

Plastic Surgery missions to Yemen organized by KSHARC delivered medical and surgical services to Yemeni people who could not travel a distant way to be treated outside the country during the war. As a member of this mission, the author performed several surgeries.

Plastic surgeons and humanitarian organizations should support missions to poor countries, unstable political or disaster areas, and countries facing natural disasters.

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Author Contribution

Mohamed Elsayed is the operating surgeon and author of the manuscript. All relevant data are included in the paper and its supporting information files.

Ethical Compliance

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Level of Incidence

Therapeutic, V.

Conflicts of Interest

The author has no competing interests to declare.

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