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Surgeons Without Borders: A Brief History of Surgery at Médecins Sans Frontières

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Abstract Médecins Sans Frontières (MSF) is a humanitarian organization that performs emergency and elective surgical services in both conflict and non-conflict settings in over 70 countries. In 2006 MSF surgeons departed on approximately 125 missions, and over 64,000 surgical interventions were carried out in some 20 countries worldwide. Historically, the majority of MSF surgical projects began in response to conflicts or natural disasters. During an emergency response, MSF has resources to set up major operating facilities within 48 h in remote areas. One of MSF strengths is its supply chain. Large pre-packaged surgical kits, veritable "operating theatres to go," can be readied in enormous crates and quickly loaded onto planes. In more stable contexts, MSF has also strengthened the delivery of surgical services within a country's public health system. The MSF surgeon is the generalist in the broadest sense and performs vascular, obstetrical, orthopaedic, and other specialized surgical procedures. The organization aims to provide surgical services only temporarily. When there is a decrease in acute needs a program will be closed, or more importantly, turned over to the Ministry of Health or another non-governmental organization. The long-term solution to alleviating the global burden of surgical disease lies in building up a domestic surgical workforce capable of responding to the major causes of surgery-related morbidity and mortality. However, given that even countries with the resources of the United States suffer from an insufficiency of surgeons, the need for international emergency organizations to provide surgical assistance during acute emergencies will remain for the foreseeable future.

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Introduction

Médecins Sans Frontières (MSF) is an international humanitarian medical organization whose mandate is to provide "medical aid to people affected by conflicts, epidemics, natural and man-made disasters, regardless or race, religion, politics or gender [1]." It began as a small French organization providing humanitarian aid to war refugees in Cambodia and Afghanistan. In the past 37 years, MSF has significantly expanded and now provides medical assistance in both conflict and non-conflict settings in over 70 countries. While the scope of its current coverage includes HIV/AIDS, malnutrition, cholera, and mental health, its history and core mandate remain intricately linked with treating surgical disease. In 2006, MSF surgeons performed over 64,000 procedures in 125 surgical projects located in 20 countries across the globe [2]. Médecins Sans Frontières is organized into five operational centers, and each provides a wide range of surgical care. In 2008, the Belgian operational center deployed 34 surgeons, 17 obstetricians, and 29 anesthesiologists to 19 surgical programs in 14 countries. This article is devoted to the history and main approaches of the surgical programs of MSF–Belgium (hereafter referred to as MSF).

Emergency response

Historically, the majority of MSF surgical projects began in response to conflicts or natural disasters (Table 1). The

Table 1 Emergency surgical missions of Médecins Sans Frontières (MSF),[a] 1983–present

Start	Country	Location	Main reason for entry
1981	Chad	Northern Chad	War
1985	Ethiopia		War
1988	Armenia		Earthquake
1989	Guinea C	Nzérékoré	War
1990	Liberia	Monrovia	War
1991	Yugoslavia	Sebreniska	War
1992	Sierra Leone	Freetown	War
1992	Mozambique		War
1992	Angola	Kuito	War
1993	Somalia	Kismaayo	War
1994	Burundi	Ngozi	War
1994	Burundi	Karuzi	War
1994	Rwanda	Kabutare	Genocide
1994	Chechnya	Grozny	War
1995	Haiti	St. Marc	War
1995	Angola	Luena	War
1997	Rwanda	Gisenyi	War
1999	Indonesia	Timor	War
2000	Indonesia	Irian Jaya	War
2001	Indonesia	Molucca Ambon	War
2003	Ivory Coast	Man	War
2004	Indonesia	Aceh	Tsunami
2004	Indonesia	Lamno	Tsunami
2004	Chad	Tine	War
2004	Chad	Iriba	War
2004	Sudan	Darfur, Serif Umra	War
2004	Sudan	Darfur, Kebkabiya	War
2004	Sudan	Darfur, Kaguro	War
2004	Sudan	Darfur, Korma	War
2004	Pakistan	Kashmir	Earthquake
2006	Haiti	Cité Soleil (Port au Prince)	War
2007	Democratic Republic of Congo	Masisi	War
2008	Haiti	Gonaïves	Hurricane

[a] For MSF-Brussels only. MSF has five operational sections

Guinea C Guinea-Conakry

organization began its surgical work in 1983 during the Chad/Libyan war. In order to treat victims of war at the border, MSF established surgical services in a tent hospital in north Chad. Expatriate surgeons reached this remote hospital after a 4-day journey overland from Darfur, Sudan. In 2004, MSF organized surgical care in three towns in Eastern Chad for refugees from the Darfur (North Sudan) genocide. Tent hospitals were erected out of locally purchased materials. Logisticians—creative and resourceful individuals responsible for the set-up and maintenance of the operating room, as well as electricity, clean water, waste disposal, and supply of surgical instruments and dressings—scrambled to find ways of keeping sand and dust out of the sterile operating room (Fig. 1). Typically, MSF teams will travel long distances to reach people in need. In 2005 during the civil war in the Ivory Coast, the surgical team camped in a forest, sleeping under mosquito nets tied to trees, as they travelled to a hospital in the rebel zone (Fig. 2). Sometimes, MSF has strategically positioned teams before armed conflict begins in order to pre-empt the need for an immediate humanitarian response. In 2002, during a civil war in Liberia, MSF was already present in Monrovia when increased fighting resulted in hundreds of war wounded. The administrative offices and living compound were turned into a hospital, and operating rooms were quickly constructed.

During an emergency response, MSF has resources to set up major operating facilities within 48 h in remote areas. Inflatable tents (Fig. 3) like the one used in Kashmir after the earthquake of 2004, can house up to three operating

Fig. 1 Surgical team en route to hospital through forest in the Ivory Coast

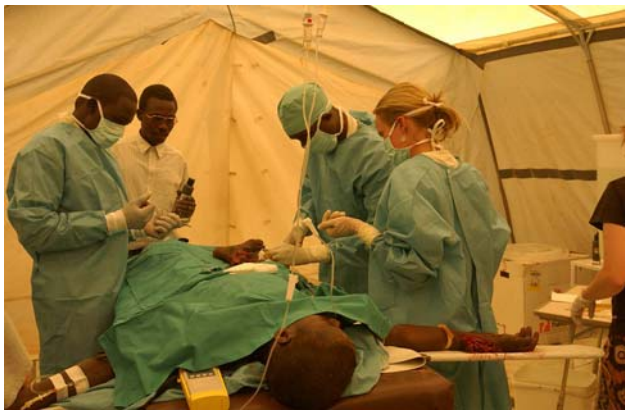

Fig. 2 Tent operating room in Eastern Chad

rooms, postoperative wards, and even an intensive care unit. For longer term services, a hospital with an operating room was constructed from several large transport containers in Bagh, Pakistan (Fig. 4). Whenever possible, existing infrastructure, such as a government hospital, will be used, although at times, such buildings will have to be completely rehabilitated (Fig. 5). One of MSF's strengths is its supply chain. Large pre-packaged surgical kits, veritable "operating theatres to go, can be readied in enormous crates and quickly loaded onto planes. These contain all the equipment needed to perform major abdominal surgery, including operating tables, respirators, surgical instruments, gowns, electrocautery, and medications—in short, everything necessary to provide life-saving procedures.

Working with the public health sector

In addition to providing emergency response, MSF provides surgical care in post-conflict contexts where a

Fig. 3 Inflatable tent hospital in Kashmir, Pakistan

Fig. 4 Hospital and operating rooms built from containers in Bagh, Pakistan

Fig. 5 Bombing during civil war in Angola destroyed much of the infrastructure

continued gap in basic health services may exist for decades. After the end of the Liberian civil war in 2003, MSF remained in the country to rehabilitate primary health services as well as surgical care. In the Democratic Republic of Congo, MSF currently provides comprehensive health services in the post-conflict area of Lubutu, including elective and emergency surgical care. Whenever possible, MSF works with the local ministry of health to strengthen the delivery of surgical services within the public health system. For example, in the 1980s in southern Chad, MSF was given the responsibility of improving the primary health care services of two districts. Hospitals were rehabilitated and local staff were trained in both medical and surgical care. Because of the severe lack of surgeons in developing countries, in certain instances, MSF supports task shifting, or the allocation of tasks from one group to a lower cadre. In Somalia and Angola, surgical nurses were trained in basic operative skills because expatriate surgeons were frequently evacuated and there were no physicians in the area to cover the surgical needs. In Haiti and Chad, formal training of nurses and general doctors to provide anesthesia and basic surgical services has been successful. Enlisting community health workers in Mozambique for referral of surgical disease and basic wound care and first aid is also being examined.

Engaging the international surgical workforce

Médecins Sans Frontières recruits surgeons from all over the world who can work with limited supplies and infrastructure while treating acute surgical disease safely and expeditiously. Most of the time, the contexts in which MSF works require general surgeons who are broadly trained and able to perform a range of procedures, including cesarean sections, intestinal resections, and fracture reductions. Usually, there are no referral hospitals available and the surgeon must be able to perform urological, obstetrical, orthopedic, and even basic neurosurgical procedures (Table 2).

Table 2 Ten common procedures in emergent and non-emergent settings

Emergent[a]	Non-emergent
Exploratory laparotomy	Cesarean section
Wound debridement	Incision and drainage of abscess
Limb amputation	Wound debridement
Chest tube placement	Manual placenta extraction
Skin graft	Dilatation and curettage
Fasciotomy	Exploratory laparotomy
Closed reduction of fracture	Skin graft
Bowel resection	Closed reduction of fracture
Colostomy	Chest tube placement
Burr holes for subdural hematoma	Herniorraphy

[a] Emergent setting defined as war, conflict, or natural disaster

If a setting becomes too unstable and the lives of the MSF staff are threatened, then a project will close. In 2008. MSF evacuated all expatriate volunteers from Somalia after a local staff member was killed. In early 2009, MSF provided medical and surgical assistance in Darfur, although many NGOs had been ordered to leave by Sudanese president Omar al-Bashir. However, after three volunteers were kidnapped, expatriate staff evacuated and programs significantly downsized.

Conclusions

Médecins Sans Frontières has provided surgical care worldwide for over three decades, working in varied contexts to provide emergency care in acute settings and surgical services as part of comprehensive health services in post-conflict settings. In stable contexts, MSF aims to strengthen local staff by rehabilitating infrastructure and training local staff whenever possible. However, as an emergency humanitarian aid organization, the principal objective is to provide life-saving assistance. When there is a decrease in acute needs (i.e., at the end of a war), when local capacity has been sufficiently strengthened, or when marginalized populations are no longer excluded from healthcare, then MSF might decide to close a program, or hand over services to the ministry of health or to another non-governmental organization. The long-term solution to alleviating the global burden of surgical disease lies in building a domestic surgical workforce capable of responding to the major causes of surgery-related morbidity and mortality. However, given that even countries like the United States suffer from an insufficiency of surgeons, the need for international emergency organizations to provide surgical assistance during acute emergencies will remain for the foreseeable future.

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