Aim: A third of the world’s disease burden remains amenable to surgical intervention with 5 billion people still lacking access to safe surgery and anaesthesia. Plastic Surgery has the potential to play a key role in enhancing access to safe and effective surgical care. Give Me Five is a non-profit organisation aiming to improve the surgical management of limb deformities in countries with limited resources.

Methods: Based in Shirdi Hospital, Maharashtra, India, a team of worldwide plastic surgeons worked in tandem with local healthcare staff to improve the form and function of patients with limb deformities. A diagonal approach was utilised to ensure sustainability with consideration of all public health, pre-operative, peri-operative and post-operative manners addressed.

Results: Eighty Eight (88) patients were treated over 4 days. The majority (55) were male with an average age of 24 years. 36% of cases involved release of post-burn skin contractures with the remaining procedures including microsurgical reconstruction of traumatic brachial plexus injuries, lymph node transfer for lower limb lymphoedema secondary to filariasis as well as syndactyly reconstruction. At 6 months follow up we had no complications to date with an average hospital stay of 2 days.

Conclusion: Impairment of the limb secondary to trauma, infection or congenital deformity can have a major impact on a patient’s physical and psychological health thus impacting daily function. Give Me 5 Foundation is a charity with an aim of improving the surgical burden of disease to the limb in developing countries in a sustainable manner.

Keywords: humanitarian; mission; no profit; organization; extremities; limb
With an aim of re-establishing both form and function Plastic Surgery has the potential to play a key role in enhancing access to safe and effective surgical care. Amongst the 44 surgical procedures recognised as imperative for a population’s health [2] the field of plastic surgery contributes in the management of trauma, burns and congenital deformities [17, 11] all of which can have physical, emotional, social and psychological sequelae. Building on the principles of successful well-established plastic surgery programs such as ‘Facing the World’ [7] we would like to introduce ‘Give Me 5 Foundation’, a no-profit organisation aiming to improve the surgical management of limb deformities in countries with limited resources. Both the upper and lower limbs play an integral role in our ability to successfully perform our activities of daily living; aiding our ability to work, communicate, mobilize and maintain adequate nutrition. Until now few organizations have focused on both surgical and microsurgical management of patients with limb defects secondary to congenital deformities, trauma and infection and thus we aim to bridge this gap and ensure efficient and effective surgical access to such patients [14].

Our Mission
In this paper we report the successful surgical treatment of a variety of conditions affecting extremities during a humanitarian mission to India organized by the charitable association “Give Me 5” (www.giveme5.foundation), in collaboration with Indian Society of Plastic Surgery. Our aim is to raise the awareness of the presenting pathology, highlight the associated impact on both individual and society as well as offer cost effective surgical solutions. Furthermore, we want to emphasize the importance of establishing effective collaboration between surgical teams, especially plastic, general and orthopaedic surgeons and to cooperate with local government physicians and staff to ensure consistent and sustainable practice.

This is the third international mission performed under the auspices of “Give Me 5 Foundation” a charitable organization set up in 2012 with headquarters in India, Italy and UK. The mission was held in Shri Sainath Hospital, Shirdi, a town situated within the state of Maharashtra, Western India between 19th and 25th March 2018. A holy town famous for its religious leader Sai Baba and production of Sugar Cane it houses a population of nearly 40,000. Strict alcohol and smoking laws within the region have helped to maintain a relatively healthy population however like most states within the country trauma, congenital deformities and filariasis infection with associated lymphoedema cause significant limb morbidity. In addition, due to many women not being able to meet the Dowry requirements, domestic assaults, usually incorporating burns unfortunately remains commonplace. With no formal plastic surgery department within the hospital the majority of the cases are conducted by the general surgery residents.

A worldwide team of plastic surgeons were involved in the mission representing countries of Italy, United Kingdom, Taiwan, Thailand, Singapore and Greece (Figure 1). The team worked in tandem with plastic, orthopaedic and general surgeons from India with an aim to leave a sustainable improvement in the surgical management of plastic surgery pathology. A Public Awareness Campaign was started 6 months in advance, with banners and posters positioned in nearby temples highlighting pictures of extremity deformities and injuries amenable to surgical treatment (Figure 2). A total of 238 patients with pathologies impairing function and cosmesis reported at the outpatients’ clinic before being examined by a local plastic surgeon. The final screening and planning of operations was done on the first day of the mission involving

Figure 1: International team arrived in Shirdi welcome by local authorities.
the whole international team and patients found suitable
were scheduled for surgery in the coming week. Surgeries
commenced at 8:00 am and continued till 20:00 pm for
5 days. Every morning and at the end of all surgeries, 1
surgeon and 1 anaesthetist carried out the round to
ensure patients were stable both pre and post-operatively
respectively.

Results
Eighty-eight (88) patients were treated over four
days with the majority jointly managed by both local
and travelling surgeons ensuring education provided
throughout to trainees (Table 1). The operative pro-
cedures are greater than the number of cases, as more
than 1 procedure was sometimes performed during a
single case. The majority (55) were male and the aver-
age age of participants was 24 years (range 5–76 years),
highlighting the impact made on the most functional
members of society. Of the procedures performed 36%
(32) involved release of burn contractures of the neck
and extremities. Eleven cases of syndactyly of the hand
and foot (5 cases bilateral) were performed using stand-
ard approach (Brunner incision) and full thickness skin
graft from the anterior thigh. Microsurgical procedures
were performed on two patients. The first a 21-year-
old gentleman with a brachial plexus injury (C5-C6-C7)
secondary to a fractured clavicle treated with nerve
transfer from spinal Accessory nerve to supra scapu-
lar nerve, median nerve fascicle to musculocutaneous
nerve and ulnar nerve fascicle to nerve to lateral head
of triceps. The other, a 35-year-old female with left leg
lymphedema treated with vascularized lymph node flap
from the supraclavicular region. The majority of cases
were either done using brachial plexus block (27) with
or without the addition of spinal anaesthesia or under
general anaesthesia (26) with all cases managed by a
local anaesthetist. At 6 months follow up we have had
no complications to date and all patients were dis-
charged from hospital within a week (average time stay
in hospital 2 days).

Discussion
Surgery is essential for addressing basic health needs and
has a significant role to play in the management of both
acute and chronic conditions. The increasing demand
is consistent across all surgical specialties within the
developing world with a projected 5000 more surgical
procedures required per 100,000 people in order to try
and alleviate the burden of surgical pathology [15].

There are several models recognised to enhance the
development of global surgery with [4] highlighting verti-
cal (1 way), vertical (2 way), ‘horizontal’ and ‘diagonal’ as
potential methods. Vertical routes tend to be an efficient
way of managing a specific problem however have the
potential to lead to dependence on the expertise of the
missionary group [4]. Horizontal methods have the pri-
mary target of enhancing the system and ensuring conti-
nuity however can be time and cost consuming and highly
dependent on local staff to ensure progress. As a result, we
tried to utilize a diagonal approach to ensure the benefits
of the two described linear methods are obtained while
minimizing their potential flaws.

The surgical mission was conducted by a team of inter-
national and Indian surgeons working and learning in
tandem, with experts in the field providing valuable tech-
niques into microsurgical management of brachial plexus
injuries and lymph node transfer for the management of
lymphedema. In addition, medical students and junior
surgical residents were invited to attend and assist help-
ing to enhance surgical skills and confidence in managing
basic plastic surgery procedures such as scar revision and
suturing (Figure 3).

Partnerships were built with local nurses teaching
wound dressing principles while physiotherapists were
Table 1: Procedure Defined Category (Some patients had more than 1 or bilateral procedure and is counted as a single operation).

<table>
<thead>
<tr>
<th>Body Region</th>
<th>Case type</th>
<th>Surgical procedure*</th>
<th>Anaesthesia**</th>
<th>Total</th>
</tr>
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<td>Release &amp; STSG (7)</td>
<td>General (14)</td>
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<td>Release &amp; Z plasty (4)</td>
<td>Local + SA (1)</td>
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<td>Scar (3)</td>
<td>Surgical correction (4)</td>
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<tr>
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<td>Excision &amp; direct closure (3)</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>Trauma (2)</td>
<td>Release &amp; FTSG (2)</td>
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<td>Release &amp; Z plasty (3)</td>
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<td>Hypospadias (4)</td>
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<td>Excision &amp; STSG (2)</td>
<td>RB + SA (2)</td>
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<td></td>
<td>Post Burn Ulceration (2)</td>
<td>Release &amp; STSG (2)</td>
<td>Local (1)</td>
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<tr>
<td>Foot</td>
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<td>Debridement &amp; local flap (1)</td>
<td>SA (2)</td>
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<td></td>
<td>Skin lesion (1)</td>
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</tbody>
</table>

*STSG: Split Thickness Skin Graft, FTSG: Full Thickness Skin Graft.
**SA: Sedation, BB: Brachial Block, RB: Regional Block.

Figure 3: Junior doctors were invited to assist helping to enhance surgical skills and confidence in managing basic plastic surgery procedures.
involved to incorporate patients back into society post operatively. Such cooperation of host hospitals and locally active non-governmental organizations provides a sustainable model to provide treatments for extremities reconstruction and infective diseases such as lymphedema.

Filaria is an infection of the lymphatic tissue spread by mosquitoes. Affecting 120 million people worldwide [12], compared to the 38 million suffering from HIV [18], there is now a large paradigm shift into the prevention and cure of this potentially debilitating disease [13]. Although distribution of mosquito nets and anti-helminth medication can prevent and clear infection respectively, the 40 million suffering from incurable lymphedema often require surgical intervention to improve both form and function (Figure 4). The surgical management of lymphedema has excelled exponentially in recent years [16] and offers an alternative to patients not responding the de-congestive therapy. During this mission as well as ensuring the de-congestive therapy clinics are optimized we have been able to educate local clinicians into the art of microsurgery performing lymph node transfers to help treat lower limb lymphedema (Figure 5A, B). We have built links and provided opportunities for the Indian plastic surgeons to undertake prestigious fellowships within lymphedema centers in Taiwan ensuring continued professional development.

Figure 4: A case of filarial lymphedema in advanced stage that is routinely seen in our clinic during humanitarian missions.

Figure 5: Lymph node transfer procedure for the treatment of filarial lymphedema. A) Harvesting of the lymph node flap from the supraclavicular area and B) inset to the lower limb.
Reconstruction of extremities represent an important niche with high demand [19]. We have described an efficient model to provide such surgical procedures for patients with limb deformities and are keen to build on current success by collaborating with other organizations to cover the increased demand of global surgery. Furthermore, there are many humanitarian missions in the world where junior or trainee surgeons are encouraged to operate [3]. Recognizing that the participation of junior trainees can result in an increased number of complications [9] we have mentored our junior and local surgeons both from India and the western world strictly under supervision of an experienced surgeon. This ensured training was provided throughout the mission, maintaining trainee enthusiasm, enhancing interest and knowledge surrounding global surgery [1, 6] whilst also maintaining minimal complication rates.

Conclusion
Impairment of the limb secondary to trauma, infection or congenital deformity can have a major impact on a patient’s physical and psychological health thus impacting daily function. Give Me 5 Foundation is a charity with an aim of improving the surgical burden of disease to the limb in developing countries in a sustainable manner.

Acknowledgements
We would like to thank all the participants involved in this humanitarian project who dedicated their time and offered their professional skills free of charge for all our patients. In particular, we are grateful to the Shirdi hospital for agreeing to participate in this research and providing infrastructure, staff at work and accommodations for International staff and patients families. In particular we express our gratitude to the Indian Society of Plastic Surgery to support our project and endorse our initiative and knowledge surrounding global surgery [1, 6] whilst also maintaining minimal complication rates.

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Competing Interests
The authors have no competing interests to declare. Fabio Nicoli and Ram M. Chilgar are founders and coordinators of Give me 5 Foundation. Benjamin Wood is secretary and coordinator of UK branch.

Author Contribution
All authors were present at the mission and contributed to research surrounding the topic of global surgery. All authors contributed to the writing of this article.

Guarantor
Ram M. Chilgar is the guarantor.

Peer Review
This is a non-commissioned paper that has undergone external peer review according to journal policy.

References


