

20 years of cleft lip and palate missions

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ABSTRACT

Volunteer missions for cleft lip and palate (CLP) care in Indonesia (1991-1992), India (1994-2003), Bhutan (2005-2010), and Kenya (2011), took place always at the same Hospital in each country. Altogether over a thousand patients were operated using a conservative protocol: Safety first - no experiments. Five months and 5 kg were the basic rules. For the native doctors, training help for self-help was priority. In the announcements, patients with CLP were primarily addressed. Burns, contractions, tumors, and trauma-cases were the second priority. Fresh trauma was done in night shifts with the local surgeons in order not to interfere. Besides facial esthetics speech was the number one issue, following priorities fell into place. Cultural aspects played a certain role in the different countries and continents.

Keywords: Cleft, lip and palate care, volunteer mission

INTRODUCTION

Indonesia 1991-1992

Indonesia is the world's most populated Islamic country. On the island of Sumatra there is a Christian exclave around Lake Toba; the believers call themselves "Batak." At the invitation of the local bishop, Prof. Widmaier (Plastic Surgeon, Stuttgart, Germany) and one of the authors (TL) spent 2 weeks in 1991 operating on children with CLP. The team was completed by an anesthesiologist, an anesthesiological-technician and Mrs. Widmaier as coordinator.

Since Prof. Widmaier focused his volunteer surgery in other hospitals in Africa and South America, the authors (TL and TK) formed a new cleft surgery team for 1992. However, things had changed dramatically in Indonesia, the medical director of the hospital having been replaced by a person who was not at all interested in volunteer CLP work. Batak believers took the team around Lake Toba to visit two Christian hospitals that were already closed, one on the island of Lake Toba and another one 50 km north on the eastside; the authorities retained only a janitor per

hospital. At that time, we did not realize the consequences of these political decisions.

In 1991 and 1992, we operated 131 patients and a total of 120 CLP cases [Figures 1 and 2] in 17 days. The Balige Hospital, where we operated was founded in 1918 by the Dutch Colonialists, celebrated its 75th birthday in the summer of 1993. As we were preparing for our third voluntary mission at that hospital, we received the telegraphic message "please do not come." One week before our planned departure the authorities had completely closed down the Christian Hospital just 3 days after the birthday celebrations. The associated midwife educational institution was closed down as well. Twenty remaining patients that were unable to walk stayed with one doctor and two nurses. All the patients that could walk had to leave, the patients who had lined up for CLP operations after several days of travelling had to return home without any treatment.

India 1994-2003

Therefore, in 1994, TK and TL accepted an invitation to perform surgery at the Christian Padhar Hospital in the

center of India, near the towns of Itarsi (70 km north) and Betul (30 km south).

This hospital was founded by Reverend Dr. Moss in 1958 and Th. Kreuzsch was very familiar with the hospital since he volunteered there in 1976 during his medical and dental studies. Between 1994 and 2003, teams of surgeons and anesthesiologists and further engaged persons from Switzerland, Germany and other countries operated 951 patients, 725 with CLP [Figures 3 and 4], during a total of 82 operation days. Most of the missions took place during the autumn vacation of the team members. However, due to the weather conditions in India, we could not arrive earlier than 2 weeks after the end of the monsoon rains because otherwise travelling for most of the patients would have been impossible. Financial support was given at the largest part by the members of Rotary Club Basel Riehen, Switzerland. About 10-12 patients were operated daily during operation time of 8-10 h in a very well-functioning Christian Hospital.

None of the doctors or nurses at the hospital had any experience with CLP operations and their postoperative nursing care. Of course, some modifications in surgical, anesthesiological, and

nursing techniques were necessary to secure the quality of treatment. The safety standards however had to be on the same level as in any other country with better resources. Stubborn insisting on the principles of own medical laws, for instance, in the Western Health Systems would not necessarily have led to the desired treatment success and probably would have irritated the hosts and endangered future perspectives.^[1] These basic thoughts were the foundation for a long success story.

One of the authors (TK) is still continuing this project at Padhar Hospital and in 2013 the 20-year anniversary was celebrated in Padhar. In the meantime the local doctors who were trained in the first phase after 9 years took over and, with the help of The SmileTrain, the hospital now is one of the leading centrally located hospitals for CLP care in India, gave a report on over 400 lip repairs in local anesthesia in the International Cleft Palate Journal.^[2] One of the goals of the international service of Rotary International is help for self-help. This is one of the best examples.

In the research we observed the position, shape, and dimension of the maxilla in unoperated CLP patients in India.^[3]

Bhutan 2005-2010

In 2004, one of the authors (JM) took over the Bhutan Cleft Care Project, which was initiated by Dr. L. Gingrich. Bhutan



Figure 1: Indonesia 1991: Bilateral complete cleft lip and palate preoperation



Figure 2: Indonesia 1992: Bilateral complete cleft lip and palate postoperation



Figure 3: India 1996: Unilateral complete cleft lip and palate preoperation



Figure 4: India 1999: Unilateral complete cleft lip and palate postoperation

is a country between India and Tibet on the south side of the Himalaya. It is about as large as Switzerland, geographically it is characterized by mountains with deeply carved valleys with smaller or larger rivers. Bhutan is a Buddhist country by law.

The hospital in Trongsa (central Bhutan) which usually does not have a routine operation program was selected because of its central position in the country where patients from the east as well as from the west could be treated. TL joined the team from 2006 to 2010. During that time 320 patients were operated, 259 with CLP [Figures 5 and 6]. The local Bhutanese surgeon was trained in the same manner as mentioned above and was conducting his own cleft surgery camps whenever needed. In addition, operating room nurses, floor nurses, anesthesia technicians, and speech/language therapists have been trained to provide CLP care.

We noticed a slight shift of patients between 2007 and 2008. Up to 2007 we had mainly unoperated older children and adults. In 2008, we had mostly babies who were not operated yet and adults who came for lip revisions. We took this as an indication that the backlog of unoperated CLP individuals was reduced and

cleft care was beginning to be delivered at more appropriate times especially to optimize speech.

Kenya 2011-2013

The Kenya Cleft Care Project was prepared on a site visit in July 2011 and realized in October 2011. The Kenya Cleft Care Project was sponsored by Rotary Club Basel Riehen, by Innerwheel Club Basel Riehen, by Dentists for Africa (Germany) and from Ebersberger Förderverein Interplast EFI (Germany). Surgeons were TL and CS accompanied by anesthesiologists, an anesthesiological-technician, an operation nurse, and coordinator. We were invited by the Archbishop for the mission at the Santa Monica Hospital in Kisumu. It was the first time a mission like this was performed at that hospital. The hospital supported us with two functional anesthesia machines and we conducted two operation tables. Two sisters from St. John's Hospital in Kisumu joined us as well as the local maxillofacial surgeon and head of the dental clinic at the Provincial Hospital in Kisumu. Altogether we performed 27 operations, primarily CLP [Figures 7 and 8], but also lip revisions, closure of fistulas, microstoma, benign tumors and noma. All the patients underwent an HIV saliva test. The result was in accordance with the blood test in most of the cases. In one case, the blood test was positive, but two controls of the



Figure 5: Bhutan 2006: Unilateral incomplete cleft lip and palate preoperation



Figure 6: Bhutan 2007: Unilateral incomplete cleft lip and palate postoperation



Figure 7: Kenya 2011: Bilateral complete cleft lip and palate preoperation



Figure 8: Kenya 2011: Bilateral complete cleft lip and palate postoperation

saliva test could not verify this. We came to the conclusion to prefer the blood test and not to overvalue the saliva test.

We saw many dystrophic underweight children, which we could not operate due to their general condition as well as many patients with burns and keloids that we could not take into the program, because of missing infrastructure and missing postoperative long time care. The Kenya Cleft Care Project was continued in 2013.

Local preparations

Recruiting of patients was done locally. In India, the announcements were made within a radius of 500 km. State hospitals, as well as Christian hospitals, private practices and public health service institutions were informed about the cleft palate camps. It is interesting to know that when India gained independence there were four Medical Christian Colleges and over 800 Christian Hospitals, a left over from the missionary work during the British colonization. Almost 70 years later there are two CMC's left and about 250 Christian Hospitals. It is said that every 2nd month a Christian Hospital is being closed in India.

Recruiting was also supported by the local Rotary Partner Club in Itarsi who provided the local newspapers with information. Recruiting in Bhutan was done on a similar way except that there are no Christian Hospitals and no Rotary Clubs. An additional point was announcements in radio and television. Patient recruiting in Kenya was done by the Catholic Church, who informed the population in the Sunday services from the recess. There were some advertisements in the newspapers and local mouth propaganda. We were informed that as soon as announcements started that a CLP camp, supported by Lions International, was initiated 1 week before our arrival in a big city nearby which was supposed to be the reason for the many dystrophic children who's parents told us that they were not accepted. Hence, there is good support in this field in Kenya. In India, the patients were submitted right away to the neighboring wards (i.e. ORL, EYE) in order not to limit the capacity of operations. Depending on the number of patients this was possible, and even the relatives of some of the patients could stay at the hospital. In Bhutan, some of the relatives as well as children waiting for surgery stayed with friends or families in private houses around the hospital. Postoperative care was always taken on the wards. Oral hygiene was insufficient in all four locations. The risks of infections were tried to be limited by preoperative dental conservative and surgical cleaning and chlorhexidin rinsing.

All patients intended for operation were evaluated by the anesthesiologists who initiated EKG's or chest X-rays when possible. Dystrophic children, children with high-grade anemia (HB below 8 g pro %) were not admitted but in some cases underwent a preoperative transfusion with blood from relatives. Premedication and general anesthesia were in every case performed under the presence and supervision of anesthesiologists. Experience has shown that - like in surgery - there are differences existing between the developing countries and it is advisable to complete the team with anesthesiologists who have had a long time experience with voluntary missions. The "medical worldwide anesthesiological biography" is of utter importance. Though mostly surgeons act as "medical directors" of a mission, no hierarchy has to be established. Anesthesiological decisions

are just as important as surgical decisions for the patient. There is no time for unfavorable discussions on a mission if one wants it to become a success.

Anesthesiological responsibilities and surgical responsibilities can be easily defined and in difficult situations one is helping each other. Experience also taught us that it is desirable to install recovery rooms with a recovery nurse. It is not advisable to send a patient postoperatively directly to the ward. It cannot be expected that the nurses on the ward are able to deal with postoperative bleeding, combined with coughing blood, aspirations, suction problems, etc. The recovery room - mostly an improvisation because not all the hospitals are built that way - has to be equipped with electricity, a light source, a suction and a pulse oximeter and a nurse leading a post-operative protocol or continuing the anesthesiological protocol, while taking direct care of the patient and the relatives. This should take place not farther than 20 or 30 s away from the operation room where surgeons and anesthesiologists can be reached immediately at any time. The anesthesiologists saw the patients when they were admitted and at least once more in the evening before the operation. The primary indication for operation was determined by the surgeons, but the anesthesiologist determined the safety of the operation without further discussion. This was a basic rule. The case history was obtained with the help of nurses and hospital staff interpreting. On-going personal and social case histories were done in India and Bhutan.^[4-6] Photo documentation was done preoperatively and postoperatively and at the yearly controls if the patients showed up. Patients with an operation risk too high were asked to come again in the following year. These patients and their relatives the reasons for the decision not to operate were explained.

MATERIALS

It was necessary to have a strict budget with the disposable materials, the instruments and the time of the people involved. In all countries, the aim help for self-help from the beginning that could so far be realized in India and in Bhutan. Two sets with surgical instruments per table were sterilized in turns. The limitation on only four sutures (4.0 and 5.0, Vicryl subcutaneous and intraoral, 4.0 and 6.0 Ethicon for skin) minimized intraoperative communication discrepancies for the local nurses. The key for success as far as efficiency was concerned the fast change between operations (15-20 min) dependent on the personal on the wards and the anesthesiological possibilities.

Operation procedures

Complete unilateral clefts [Figures 3-6] were operated with the operation procedure of in Bhutan modified with a flap.^[7,8]

Incomplete unilateral cleft lips sometimes were, if there was enough material, done with a triangular flap depending on the situation and the preference of the surgeon.^[9] Nasal deformation was - if indicated - primarily improved by setting the dislocated cartilage in a natural position.

Complete unilateral clefts (lip, alveolus, hard palate, and soft palate) were only operated in one session under the following preconditions:

- Enough time
- Narrow cleft
- blood transfusions available.

These onetime operations were exceptions of the rule. Usually, counting the big number of patients, the cleft lip was closed and the parents of the patient were told to come back for the hard and the soft palate one year later. This way we partially got to see late results of our lip operations because not all the patients showed up again.

The bilateral cleft lips [Figures 1, 2, 7 and 8] were - also according to the preferences of the surgeon - closed with a straight line procedure.^[10,11] Large bilateral clefts that required lip adhesion were accordingly operated. In all cases, the anterior nasal layer and the intraoral alveolar part were closed as far as possible in order to prepare a later cleft palate operation without or with minimal fistulas. No bone transplants were done to bridge the alveolar processes. Malpositioned teeth that could have jeopardized wound healing after the lip closure were extracted. In some cases with bilateral complete clefts, safe closure maintaining the protruded pre-maxilla was possible. The pre-maxilla was set back with osteotomy and osteosynthesis of the ventral part of the vomer later in cases where necessitated for successful lip repair.

Closure of the soft and hard palate

Experience incomparable projects showed that closure of the palate in grown-ups seldom led to normal speech.^[12] Knowing this, the decision was made to follow the conventional concepts and to close the cleft palate regardless what age. Reasons were:

- Improved swallowing
- Prevented ear infections
- Some patients still showed little speech improvement.^[13]

This reasoning under anatomical, morphological, functional and social aspects implied that altogether more patients would take the profit from a palate operation, and less patients would not profit. The operation usually performed was an intravelar veloplasty without pharyngoplasty.^[14,15] Palatoplasty was often more difficult in adolescents and grown-ups with large clefts in combination with vertically dislocated cleft sided alveolar segments due to a long time interposition of the tongue in the cleft.^[12] Other problems in adolescence and grown-ups were mucoperiosteal fibroses that made preparation of the oral and nasal layers more difficult and led to more bleeding. There were also difficulties when preparing the musculus levator palatini showing different grades of fibrosis and atrophy.

Speech improving operations

Velopharyngoplasties were performed with a cranial superiorly-based pedicled pharyngeal flap. Indications for velopharyngeal management were:^[16]

- Rhinolalia aperta (secondary)
- Fistula repair in cases with scarring and shortening of the soft palate (secondary)
- Wide clefts with soft palate tissue deficiency in patients older than 6 years (primary operation).

Besides facial esthetics speech was the number one issue, following priorities fell into place.^[17]

Cleft lip and palate independent operations

In order to manage the workload caused by the numbers of CLP patients, the routine elective noncleft-related operations, especially at Padhar Hospital in India, were cancelled during the 2 weeks of the camp and noncleft related emergency operations were performed in the evening and at night. Of course, the guest surgeons tried to help out with emergencies if they could. The emergency cases primarily were caesarean sections, acute trauma (including bear mauls) and acute infections.

Additionally benign tumors (fibromas, hematomas, lipomas, and schwannomas) and if time allowed it esthetic procedures were done either demonstrating or assisting the local surgeons. The importance of this type of collaboration cannot be emphasized enough. It is not only a gesture of politeness it is also a moral commitment to the patients.

Postoperative treatment

The local nurses on the wards were introduced to the operative and postoperative protocol and prepared for possible complications. The relatives or accompanying family members of the patients were then informed by the nurses and integrated into the direct postoperative patient care. It was new to us that family members in India, for instance, were preparing the food (lentils, cooked rice). The daily diet in Indonesia, India and Bhutan consists of tea and soft vegetables and is ideal for the protection of intraoral wounds especially after cleft palate operations and sufficient for postoperative caloric needs. This is a very important cost saving factor that is overlooked in the Western countries. Besides feeding, the relatives also wash the laundry of the patients. This would save a lot of money in the collapsing Western health systems.

During the hospitalization, after each meal mouth rinsing and tooth cleaning were performed as soon as the patients could tolerate it. Lip sutures were disinfected daily and treated with a topical cream. Supervision and visiting of the surgeons took place once daily and on demand. The patients as a rule stayed 6-7 days when sutures had to be taken out. Patients with resorbable sutures and lip operations left hospital earlier especially in Bhutan.

COMPLICATIONS

Lip dehiscence was infrequent: Three occurred (two incomplete and one complete) caused by postoperative infections during 10 years in India (1994-2003). Palatal fistula was the most common complication; anterior fistulas especially in bilateral clefts sometimes were unavoidable. We also saw partial ischemia following the difficult mobilization of fibrotic nasal and oral layers that finally had to be adapted under tension. We had one necrosis of a premaxilla after lip closure in India and four complete palatal dehiscences after tongue flaps that led to the decision to stay away from tongue flaps in youngsters who could not be disciplined as desired.

A reliable list of long-term complications is not possible because most patients never returned for follow up. Out of 725 operations in India, 119 were secondary operations, mainly lip revisions, nose corrections, velo-pharyngo-plasties, micro- or macrostomias,

premaxilla setbacks and fistula repairs of which proximately 25-30% were primarily operated by our group. In any case, it was a goal that all patients could be released safely without confronting the local colleagues with unsolvable problems.

GENERAL REMARKS

Besides Service Clubs (Rotary International, Lion's, Kiwanis, Zonta, Soroptimists), a number of organizations (Médecins Sans Frontières, Terre des Homes, The SmileTrain, Interplast, Friends of Padhar Hospital, Rotaplast, OperationSmile), some with NGO status, are financing volunteer missions worldwide.^[12,18,19]

There are two basic types of volunteer missions: The "surgical safari" where well-organized teams fly into the region of interest, do their work and fly out again. They never come back, but sometimes they are succeeded by another team performing another "parachute mission." This approach is not to be totally condemned but two negative points have to be remarked upon:

- A continuous relationship between guests and hosts cannot be built
- A "help for self-help" program cannot be established.

"When in Rome do as the Romans do" will not function. When in Rome, find out what good the Romans are doing would be the first step, the second step would be to ask what presents would be happily accepted. There are always two sides. Already 1985 and 1986 there was an English team on a volunteer mission in Sri Lanka.^[19-21] During those 2 years they performed 410 operations on 346 patients during 52 operation days. Logistically, a remarkable professional performance which found adequate acceptance in the literature. The authors noted that especially during the second mission in 1986 the local surgeons of the hospital frequented the operation theatres as usual and gave room for the surgeons from England for the CLP operation only at night. Of course, this was a heavy stress factor for people who are doing voluntary work in nonfamiliar surroundings.

During the past 20 years, Lambrecht was member of four volunteer missions in Asia and Africa that always took place at the same hospital within each of the four different countries. In 146 days altogether 1429 patients were operated of which 1124 were CLP cases.

As stated before, we prefer this way: A trustful relation between hosts and guests has to be built up. The hosts have to know who the guests are and what they can expect from them. The guests have to rely on the hosts and have to find out what presents they can bring. The Latin-Roman would have said: "Manus manum lavat" – one hand washes the other. The first present the guest can bring is experience: Where good results come from experience, experience itself often comes from bad results. For anesthesiologists, a "medical worldwide mission biography" is ideal. A surgeon should have at least 6-10 years intensive experience in CLP operations and the interdisciplinary care for the patients.

Patient safety requires a conservative protocol

This implies no experiments – especially when teaching unexperienced surgeons who are team members. Teaching should

be strictly limited to the native local doctors. Otherwise "help for self-help" is unrealistic. Safety for the patients: Minimum 5 months of age, minimum 5 kg of weight is the basic rule. Long-term operation procedures with predictable results internationally accepted should be used.

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