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PERSONAL EXPERIENCE

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Hernia surgery in the South American woodlands: A surgical adventure in Argentina

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Abstract *Background*: Because of the socioeconomic conditions existing today in Argentina, I decided to operate on hernias and incisional hernias among the poorest population in their living environment. *Methods*: To achieve this, I organized a group of 19 people, including resident surgeons and technicians, transferring everything in order to set up three surgical rooms in an old house, in the worst surgical environment, in the middle of the woodlands in the northeast tropical part of our country. It was like war-trench surgery but in peacetime. We successfully operated on 83 cases with different techniques in 4 days, in a trip that lasted a week. *Results*: After 18 months, there is not even one complication or recurrence. *Conclusions*: Because of this experience, I must remark that the patients' immunity-cicatricial condition is essential to success.

Keywords Woodland hernia surgery · South American experience

Introduction

Argentina is a third-world country situated in the extreme southern part of the American continent (Fig. 1), with 3,000,000 km^2, and 37,000,000 inhabitants with Amerindian and European roots. Some groups of Indians live on isolated reservations and maintain their genetical race characteristics. There are also the Creole, mixed with Europeans, who live in small villages or big cities. The climate regions vary from the tropical one in the north to the extreme cold in the south. Fifty-two percent of the population lives below the poverty line, that is to say, that they barely subsist, and are distributed around the most important cities or in small villages spread around the country. Those who live near urban centers attend free public hospitals by their own means, where they are assisted. The isolated ones never leave their area and are assisted by regional physicians or witch doctors far from any surgical center. That's why in August 2002, invited by the "Health Pastoral Group" (Father Mario Bellini and Dr. Milton Bobadilla) from San Martin II, Formosa, I organized a surgical adventure trip to the extreme northern part of the country, close to the boundary with Paraguay, in the middle of the tropical woodland 1,600 km from our capital city, Buenos Aires. The intention was to operate on hernias and incisional hernias in an absolutely ambulatory way [1], not day surgery [2, 3]. The place, San Martin II, a small village full of dust (Fig. 2), has no surgical centers and no beds for patients. The place has electric lights, but there is no drinking water, only rainwater, gathered in cisterns or in a big public uncovered flat hole (Fig. 3).

The criterion was to operate under warlike conditions but in peacetime.

Materials and methods

To make possible this enterprise, I organized a group of 19 people, including resident surgeons and technicians. We obtained some financial support from the Tiel (Holland) Rotary Club. The transport of the group and all the necessities to create three improvised surgical rooms (Fig. 4) was accomplished with seven vans with ten drivers donated by Ford Argentina. The surgical instruments were lent by our Pirovano Hospital. In an environment full of dust, in an old house, with improvised common wood surgical tables, and fans because of the heat (40–50° C), we organized three

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Fig. 1 Argentina in the southern part of the American continent

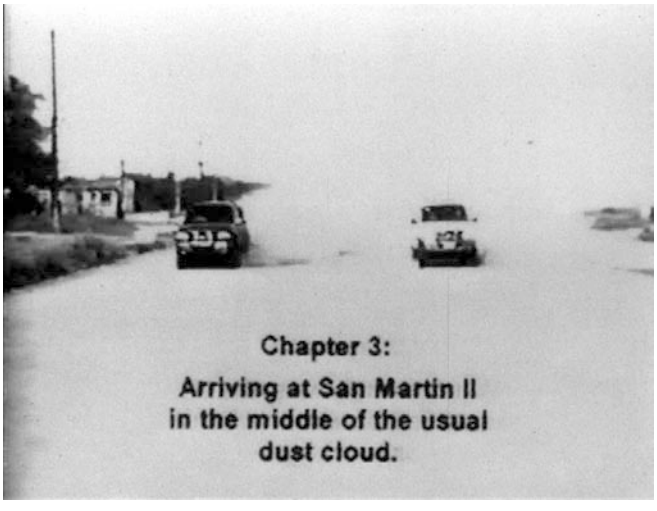

Fig. 2 Arriving at San Martin II in the middle of the usual dust cloud

surgical rooms, in which we operated on 83 cases (67 patients) in 4 days, during a trip that lasted 1 week (Fig. 5, Fig. 6, Fig. 7, Fig. 8, Fig. 9, and Fig. 10). The

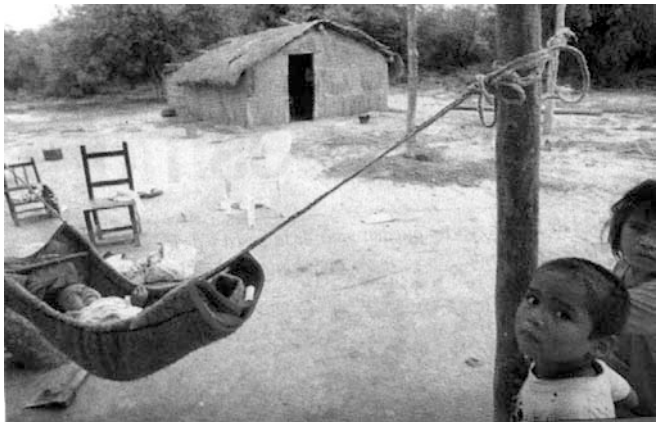

Fig. 3 The Indian environment in San Martin II

Fig. 4 Surgical rooms with improvised surgical tables

Fig. 5 Example of the kind of hernia operated on

first day, early in the morning, I started to give patients instructions in the church, and immediately I examined all of them, as well as dividing them according to the complexity of the pathology—the simplest for the residents and the most complicated for me. The clinical

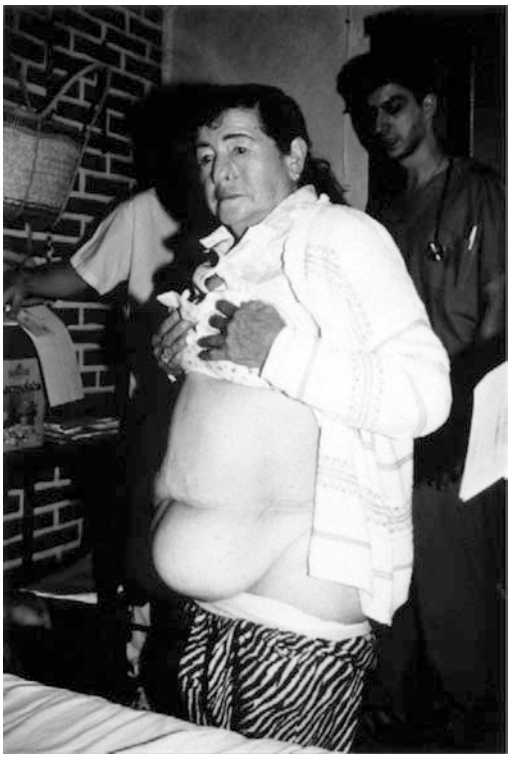

Fig. 6 Example of incisional hernia operated on

Fig. 7 During the surgery, we used only local diluted anesthesia

histories were taken. All the cases were operated on with the same surgical precautions as in any surgical center, only with local diluted bicarbonated anesthesia (Lidocaine 0.5%). As in our daily work in Buenos Aires, each patient received only one dose of antibiotic (Cefalotine 1,000 mg on this trip) at the beginning of the surgery. All the surgical instruments were disinfected with CIDEX E-3805-9 (Glutharaldehyde nominal 2.4% Johnson & Johnson). We operated the first day nonstop for 17 h, the second day for 14 h, the third day for 12 h, and the fourth day for 6 h. We used techniques to reconstruct the posterior wall according to the anatomical-pathological findings during the

Fig. 8 Multiorificial incisional hernia

Fig. 9 Multiorificial incisional hernia operated on with Gibson's technique

surgery for each patient: Marcy, Condon-Madden, Shouldice-Berliner, Lichtenstein-Amid, PHS-Gilbert [4], Mayo, Judd, Morestin, Welti-Eudel, Chevrel, and Relaxing Incisions [5], (Gibson and Clotteau on this trip). If the patients had some pain, we controlled it with Diclofenac 150 mg, fast-slow absortion (Hexal AG, Germany) during the first days. The postsurgical control and the follow-up were performed by the general physician of San Martin II, Dr. Milton Bobadilla. All the patients were followed up at 2, 7, 15, 30, 90, 180, and 360 days, and will be followed up yearly over 5 years.

Results

All the patients (Table 1) listened to music and spoke with us during the surgery, and afterwards they walked immediately to dress themselves, and return to their normal activities (Fig. 11, Fig. 12)—to eat, walk, drive, ride a bike or a horse, etc. in a true ambulatory way, not

Fig. 10 Multiorificial incisional hernia during the surgery

Fig. 11 Multiorificial incisional hernia at the end of the surgery

Table 1 Patient characteristics

Men	53
Women	30
Ages	13–81 years
Primary groin hernias	50
Recurrent groin hernias	3
Epigastric hernias	7
Umbilical hernias	11
Femoral hernias	1
Incisional hernias	9
Hydroceles	2

day surgery, as we have been doing in our hospital since 1991, successfully (5,600 patients so far).

After 18 months, among all the cases controlled by the regional physician, no complication or recurrence was found.

Discussion

Our hypothesis is that we work with warm-blooded autopoietic organisms. They are created to respond to and repair automatically (immune system) each aggression, and of course surgery is an aggression. So all kinds of surgery have a degree of morbidity, related to the complexity of the action. That is why our surgery is simple but not simplified (local diluted anesthesia, the simplest and most efficient technique, the least quantity of foreign material, etc.), of course in our specialty, according to each case. This experience shows us five important facts:

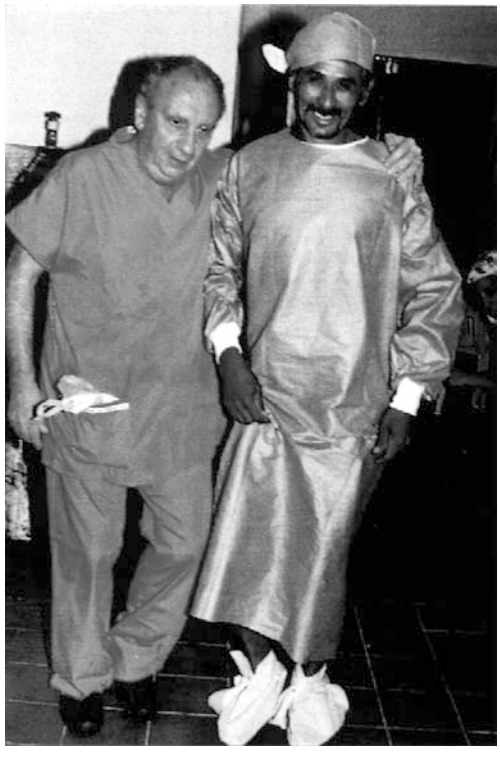

Fig. 12 A patient immediately after surgery

1. Among the pure Pilaga Indian (population 500), there were no hernias, and the chief, Mariano, has never seen one among his people, apparently due to racial, anatomic-genetic reasons. Dr. Eduardo Reyes arrived at the same conclusion. Dr. Reyes is from Chile and he worked with the Yanomani Indians in the Venezuelan jungle. All patients we operated on were Creole. This finding must make us think about the ethiopathogenesis of hernia. Finally there is the question of whether or not we find hernias among smokers and nonsmokers, office clerks and bricklayers, porters, and weightlifters, etc. It seems that the anatomic-genetic condition is very important to hernia development in healthy people.
2. In spite of the dusty environment in the whole village and the improvised surgical conditions, we have not had even one complication in the postsurgical follow-up (18 months), highlighting the importance of the patient's immunity behaviour.
3. All the techniques that reconstruct the posterior wall, with or without meshes are useful, depending on each case. One may encounter a small, dilated deep inguinal hole, a dislocated transversus arch, or a totally destroyed inguinal floor, and the only way to decide what to do during the surgery is the anterior or open way.
4. It is well known that tension (normal) improves cicatrization [6]. Then the best procedure is to submit the patient's wound to normal efforts immediately after surgery. The only warm-blooded animal that lies after surgery is the human one.

According to points 3 and 4, since 1990, we have operated with local diluted anesthesia, using all the well-known techniques that reconstruct the posterior wall, in an absolutely ambulatory way and advised the patient to return immediately to his normal activities.

5. With the related kind of surgical procedure and controls to operate on hernias and incisional hernias, for the last 14 years, our recurrence rate is 0.3%.

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