A BOSNIAN JOURNAL

Introduction

Not long after the beginning of their terrible civil war Bosnians became aware of, and thoroughly fed up with, fleeting visitors to their country who arrived armed with promises of help and equipped with cameras to record their visit. Unfortunately too many were like Macbeth's *"poor player that struts and frets his hour upon the stage and then is heard no more".* Most Bosnians described how they felt like the subjects of "war tourism" and soon became disenchanted with all visitors.

During the active hostilities immediate assistance was imperative when the day-to-day demands of survival were paramount but there was also a humane duty to help plan the future. The first conversations on this subject were useful for raising morale but eventually hope was converted to real plans for post war reconstruction. A consistent request was to support paediatric orthopaedic work and in particular the ultrasound assessment and treatment of the infant condition Developmental Dysplasia of the Hip.

My wife and I were soon able to make our first contribution by purchasing a new ultrasound machine that is essential for this type of work[2] The purchase of the ultrasound machine was proof that if such work is to be successful, then the generosity of others counts at least as much, and perhaps more, than orthodox management! We were informed that a nearly new demonstration model of an ultrasound machine was available for £9,000 but it was sold during the 24hours we were considering whether or not to bid. On hearing of our work the manufacturers offered a completely new machine worth £17,000 for the same price.

DR SALIHEFENDIC ASSESSING AN INFANT IN SARAJEVO STATE HOSPITAL WITH THE ULTRASOUND EQUIPMENT THAT WAS PURCHASED AFTER *"AN OFFER THAT COULD NOT BE REFUSED"!*

Such gratuitous generosity repeatedly occurred as our work continued and the next example was the seminal event in the history of the Charity. A chance meeting with a complete stranger, Simon Oliver, while I was en route to Sarajevo via Zurich, ensured the creation of IDEALS. Simon subsequently told me that because of the black shirt I was wearing he thought I was a priest. It is now embedded in the history of the Charity that, (before the aircraft had landed in Zurich but after he was aware of my true identity), Simon wrote me a cheque for £5000! In his definite and decisive manner Simon left me at Zurich with the advice "Start a Charity" --- and so we began by establishing an account designated the "The Bosnian Fund". Without Simon's vision and his extraordinary act of kindness there would be no IDEALS.

It is imperative to carefully monitor seriously ill patients during their hazardous journeys to specialist centres and the first use of Simon's donation was to purchase mobile oxygen monitors for use in transferring Bosnian patients with critical conditions such as head injuries across territories that were still hostile and where the roads were often rudimentary. But the new fund had effects well beyond the purchase of equipment.

The Leonard Cheshire Centre for Conflict Recovery at University College London had previously contacted me but I did not feel that a lone individual like me could have anything to offer such an auspicious outfit. (After all I was particularly conscious that I had been one of the most undistinguished graduates of my generation from UCL!!)

With the possibility of a new Charity and some "cash in hand" it now seemed appropriate to contact LCC and we were able to help with a, greatly needed, donation of £1000 in support of their "Fast Track" surgical work in Azerbaijan and refurbishing, to high standards, of three infant incubators – donated by Maidstone hospital – and their transport to Baku hospitals. For those interested in fortuitous coincidences it is fascinating to record that the "Fast Track" scheme had reached financial crisis point just before I contacted LCC and, also quite coincidentally, the UK nurses working in Azerbaijan were looking for infant incubators. Simon's initial donation is still working via the equipment purchased for Bosnia and Azerbaijan and through the patients that were operated on in the Caucasus.

The early association between IDEALS and Leonard Cheshire Centre at University College was of great importance and it is a relationship that has benefited hundreds of patients around the world.

The Charity was eventually registered in March 2000 with Trustees Mr Simon Oliver, Dr Michael Price, Dr Eamonn McCoy, Mr Bob Marshall Andrews QC MP and I. Professor Jim Ryan of The Leonard Cheshire Centre for Conflict Recovery at UCL and Dr John Martin from Belfast soon joined us.

The word IDEALS was largely chosen because it is an excellent, and unique, name for a registered Charity of this nature but, appositely, the words from which the acronym is derived – International Disaster and Emergency Aid with Long Term Support – precisely described our aims. Over the past five years the Charity has been faithful to its description and the philosophy of its name.

- We have been responsive in an International manner with Aid given in Azerbaijan, Bosnia, Sierra Leone, and Afghanistan along with our most recent activity in Pakistan. For a small charity with no formal logistic support – and hence no administrative costs – this is no mean achievement in less than five years. In all of these countries IDEALS has tried to allay some of the effects of war.

- We responded to the long term Disaster of war where economic and social collapse had occurred. In Sierra Leone, for example, after years

of a civil war there were large numbers of amputees with no chance of affording expensive imported prostheses. IDEALS supported research into the development of locally manufactured artificial limbs using inexpensive materials

- The Aid was certainly of an Emergency nature in Bosnia but most of the work in the Balkans, and more recently in Pakistan, has largely been of a Long term Support in clinical work and medical education.
- In many ways the more recent work in North West Pakistan encompasses all the aims of IDEALS by allowing us to support a region with major problems derived from years of war and internecine strife. It opens up the possibility of extensive, long term, activity in the area by helping to provide education in immediate trauma care and providing the equipment required for improved clinical activity.

IDEALS has always been a medical Charity. The great theme is education because this is a major requirement in redevelopment of health services following any form of prolonged assault on a society. Since the end of the Bosnian civil war a response to acute needs around the world has had to be ruled out because of our limited resources. In any event there is no need to supplement excellent emergency services provided by the large international organisations such as the Medécin sans Frontiere, the Red Crescent and Red Cross.

Any Charity is defined by its results and the most efficient way to present IDEALS is to review the work over the years country by country. It is not only a list of achievements but of lessons learned in using our scarce resources.

BOSNIA

IN 1995 Bosnia was in ruins. The war that politicians and militarists had sought was over but the only beneficiaries were those who always profit from such events.

Without doubt the portrayal of the true horror of the war by the world's media prevented an even greater catastrophe occurring but with the end of gunfire

the attention inevitably decreased. In a short time the spotlight was redirected, the world's interest waned and from a media perspective the country darkened like a closed theatre. Surprise about ones continuing involvement in Bosnia was the common attitude expressed after the cessation of major hostilities *"Because the war was over and therefore everything must be all right".*

In fact this was just the time when Bosnia needed continued help from its friends and there was no better way to demonstrate it than by offering assistance in reconstructing the services that had been either destroyed by the hostilities or converted to purely wartime activities.

IDEALS was eminently suited to this task and with a programme of studying developmental dysplasia of the hip already underway and educational visits to the UK by surgeons and anaesthetists either completed or planned it was simple to build on these activities.

JUNE 2001: Prof GAVRANKAPETANOVIC AND Dr S DJOZIC DELIVERING LECTURES ON THEIR WORK AT EDINBURGH TRAUMA CARE CONFERENCE. THEIR ATTENDANCE WAS SPONSORED BY IDEALS

Post-war Bosnian Clinical Education

Education

In all medical specialities repeated familiarisation with ones subject is essential if a high level of clinical confidence and competence is to be maintained. This is true in any profession and it is not surprising that the years of isolation from the mainstream of modern medicine reduced the clinical and technical confidence of Bosnian medical staff.

The remarkable work undertaken by local surgeons during the war was very specialised and, during the hostilities, they frequently stated their wish to redevelop the educational levels to match those in the rest of Europe. There was a thirst for publications and for training in modern methods.

The donation of numerous books and journals has been a major contribution to Sarajevo and in addition two senior surgeons, Dr Sukrjia Djozic and Professor Ismet Gavrankapetanovic, were sponsored as Fellows of the British Orthopaedic Association with their annual fees paid by personal donation via IDEALS. The total sum spent on such activities to date is in excess of £5000 via Charity money and IDEALS linked personal donations.

In addition there have been several visits by Sarajevo surgeons and other medical staff to the UK in order to attend Conferences both as student delegates and to present lectures on their own subjects. The latter activity was very important because it helped to develop the confidence in themselves and also to show the Bosnians how much their war time work was appreciated. An example of this occurred during a visit to the British Trauma Society meeting in Belfast during March. Dr Raib Salihefendic received a standing ovation after presenting a paper on the use of the fracture fixation device, Sarafix, for complex injuries.

IDEALS has also been to the fore in encouraging research and helping its collation for publication. A list of the research and educational activities demonstrates their wide clinical range and the Charity's involvement.

1. **TRAUMA SOCIETY MEETING IN BELFAST March 1996:** Visit by Dr Salihefendic to present a paper and during the following three weeks to attend at various hospitals for training in infant ultrasound techniques, attend a course in Trauma at Manchester University and review joint prosthesis technology in Belfast City Hospital

2. **WRIGHTINGTON HIP CENTRE July 1998:** Visit by Dr Djozic and Dr Salihefendic for a course on joint prostheses.

3. **BOURNEMOUTH TO TRAUMA CARE CONFERENCE June 1999:** Visit by Dr Djozic, Salihefendic, Dr M Begovic, Dr V Cengic and Dr H Leto to deliver papers in on subjects related to war time practice in orthopaedics, blood transfusion during a modern siege, resuscitation via emergency thoracotomy and vascular surgery. The Chairman for the group presentation was one of our Trustees Dr E McCoy while the social programme included staying as guests in Mr and Mrs Simon Oliver's home in Wiltshire and dinner as a guest of another Trustee Mr Bob Marshall Andrews MP at the House of Commons on the evening that the end of the Kosova war was announced. The visit to Parliament was also high lighted by the presence of Mr Martin Bell MP who was a much respected BBC war Correspondent in Bosnia during the conflict.

4. **TRAUMA CARE CONFERENCE IN EDINBURGH July 2001:** Visit by Dr Sukrjia Djozic, Dr Svetlana Djozic and Professor Ismet Gavrankapetanovic. Papers were delivered in a plenary session along with JPBeavis and Cara Macnab from LCC at. The subjects included injury-induced osteomyelitis; the spectrum of war injuries and long term

physical psychosocial problems derived form the wounds sustained during the siege of Sarajevo.

5. **COURSES AT ROYAL COLLEGE OF SURGEONS OF ENGLAND SEPTEMBER NOVEMBER AND DECEMBER 2001:** Visits by Dr R Covic, Consultant General Surgeon to qualify in laparoscopic surgery so that this technique could be introduced to the State Hospital Sarajevo

6. **"IN HOUSE TRAINING" IN SARAJEVO:**

- Between February and May 2001: Three lectures on DDH by JPB including detection and treatment and the requirements for a pan Sarajevo research project.

- June 2001 and summer 2003: Professor Graf an international expert in the field and his assistant were funded by IDEALS to visit Sarajevo to conduct courses and certificate staff for ultrasound detection of DDH.

PROFESSOR GRAF INSTRUCTING SOME OF THE FACULTY IN PRACTICAL ULTRASOUND TECHNIQUES SARAJEVO JULY 2001

7. DEVELOPMENTAL DYSPLASIA PROJECT

Key words/expressions: ***Developmental Dysplasia of the Hip (DDH), ultrasound, early detection, traction, plaster of Paris, extensive surgery research project***

This project was jointly organised between the State Hospital Sarajevo and Kosovo University Clinical Centre. It has been funded by both IDEALS and LCC. Leonard Cheshire has paid for the airfares and accommodation of JPB to visit Sarajevo while the main function of IDEALS has been to pay for the training in the UK of surgeons involved in the project and also to pay for Professor Graf to visit with his team on two occasions to undertake courses for a wide variety of specialists in the technique of neonatal ultrasound.

The initial equipment was purchased as already described and a computer, printer and CD recorder were donated via IDEALS the total cost being £15000.

DDH is a significant condition in early child hood that requires increasing intervention if delay occurs in diagnosis. Even a delay of say twelve weeks can harm the infants' hips and lead to premature osteoarthritis

- If the diagnosis is delayed for several months, lengthy in-patient treatment is required and often extensive surgical intervention and months of plaster.
- When undetected for years it leads to deformity and eventually to early onset of crippling osteoarthritis of the hip.
- X-rays are of no value until twelve weeks after birth and simple clinical examination misses many cases.
- Examination, awareness of the" high risk" group of infants and ultrasound are the best ways of detecting DDH within vital the first few weeks of birth when simple splinting will suffice for treatment.
- The high risk group includes: Family history of the condition, certain obstetric problems including Caesarean section, high birth weight, first born females, other

Management of such late presentation of the condition will drain the resources of any community and Bosnia has much more important surgical matters to deal with. Awareness of the existence of the problem is the most important feature in any community and the best way to ensure this is to develop a system of easy referral. When supplemented by the use of ultrasound in detection of the condition a significant improvement occurs in the community with many children being detected within the first weeks of birth.

PROLONGED TRACTION TO BE FOLLOWED BY MONTHS OF PLASTER FOR INFANT NOT DETECTED UNTIL FOUR MONTHS OLD – SARAJEVO 2001

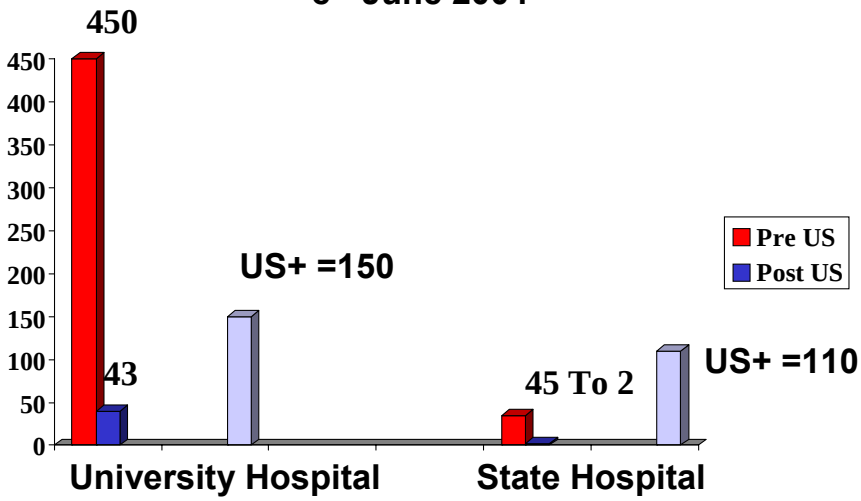
GROSS AND CRIPPLING HIP DESTRUCTION AT AGED 45 YRS IN WOMAN WITH DDH AS A CHILD WHO WAS NOT DIAGNOSED UNTIL AGED 18 MONTHS

In August 2001 An agreement was signed between the Bosnian Ministry of Health, each of the Sarajevo Hospitals, IDEALS and the Leonard Cheshire Centre to undertake a research project of clinical and ultrasound assessment of infants in The University Clinical Centre and the State Hospital Sarajevo.

The main purpose of the survey was to assess those children with a family or obstetric history that indicated the possibility of DDH and initiate early treatment for them when required. At the time of preparing this document the final figures for the first three years are being developed but the following statements can be confidently made.

- The project has now been in progress for nearly **three years**.
- Over **four thousand** children have been assessed.
- Many -- **at least 40** -- who would have not been assessed at all were discovered to need treatment for this condition with simple non-surgical methods.
- A research paper has been prepared that demonstrates a reduction in the incidence of late presentation cases in Sarajevo requiring traction and/ or surgery.

CHANGE IN OPEN REDUCTION OF DDH WITH ULTRASOUND SERVICE/ YEAR
Sources Prof I Gavrankapetanovic and S Djozic
8th June 2004



A SLIDE SHOWING THE REDUCTION IN OPEN HIP REDUCTION OPERATIONS IN CHILDREN SINCE THE INTRODUCTION OF ULTRASOUND SURVEILLANCE (US)

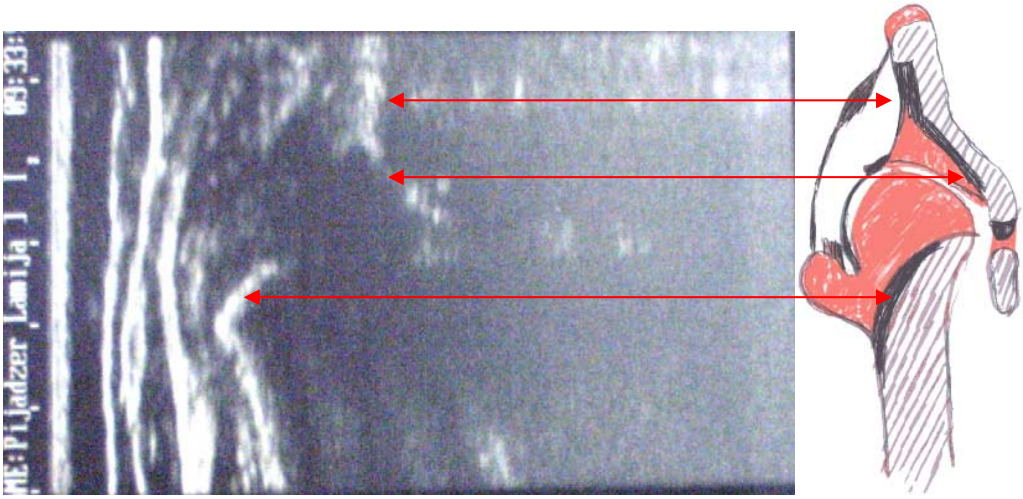
<u>As with many worthwhile projects there are good "spin offs".</u>

1). An entirely novel method of teaching the interpretation of the ultrasound results. The conversion of black and white two dimensional figures into the real world of hip abnormalities has always proved difficult for novices and the false interpretation of results – especially if an easily treated early problem is missed– can be disastrous.

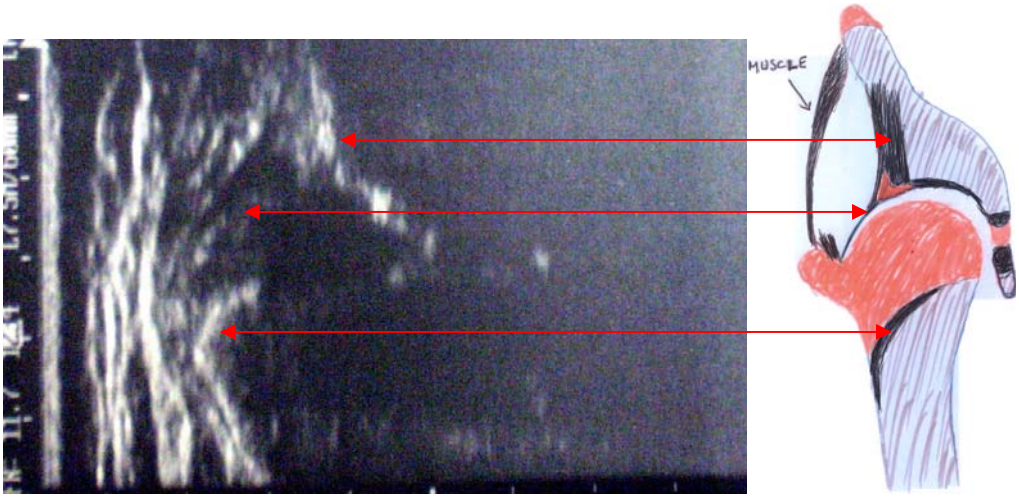
THIS IS AN EXAMPLE A NORMAL ULTRASOUND THAT REQUIRES HIGH LEVEL OF ABILITY TO INTERPRET. EVEN THEN IT IS OFTEN MISINTERPRETED BECAUSE OF THE LACK OF UNDERSTANDING OF HOW IT IS RELATED TO "REAL" ANATOMY.

As can be seen from the diagram even a normal ultrasound can appear quite complex and it is certainly so to inexperienced doctors who are required to make precise decisions on whether or not to treat infants.

My first attempts at lecturing in a foreign language to a group of doctors of various specialities proved to be a fraught experience. The ultrasound diagrams could only be explained with confidence via pictorial aids hence diagrams that related the ultrasounds to the real hip structure were designed.



ABNORMAL ULTRASOUND PLUS DIAGRAM
THE CUP OF THE HIP IS SHALLOW AND THE BALL IS DISPLACED OUTWARDS FROM THE SOCKET



NORMAL ULTRASOUND PLUS DIAGRAM
THE CUP IS DEEP AND CONTAINS THE BALL OF THE HIP VERY WELL WITHOUT DISPLACEMENT AS IN THE ABNORMAL SIDE

The diagrams are being adapted to permit measurements of angles and assessment of the position of internal hip structures in the original recordings when used as transparent templates against the ultrasound pictures.

- These diagrams are not used elsewhere as far as we know and after designing them it was obvious that they could be used in the clinics for easy reference. As can be seen the diagrams represent a simple method of describing the abnormalities within the infant's hip and relating these to the ultrasound appearances.

- They have proved to be a very effective way of not only teaching ultrasonography but also have ensured that there is a set of reference diagrams in the clinic.

- The method has proved so effective that we have now been invited to submit a paper on the matter to the British Journal of Hospital

Medicine. This will be written in collaboration with the Orthopaedic Department of University College Hospital.

- In addition the diagrams will form an important part of a book that we are publishing on the subject of ultrasound assessment of the infant's hip.

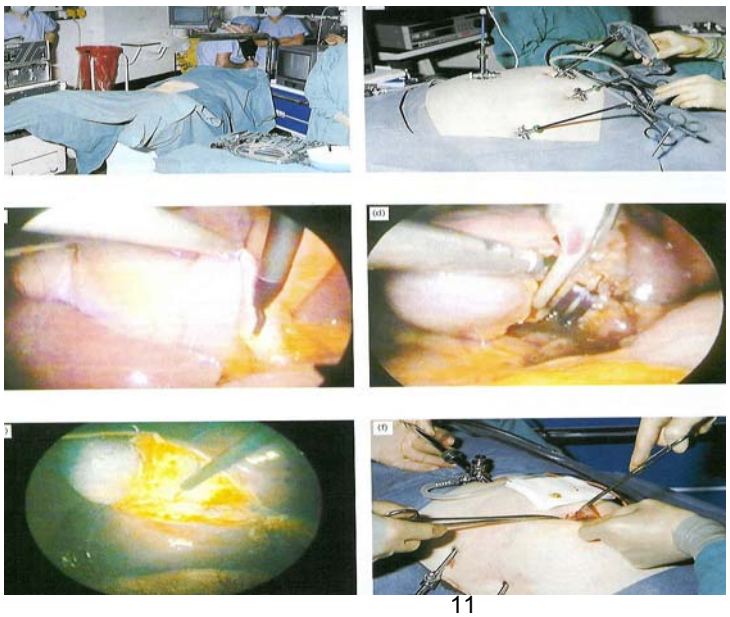
2). As a result of our experience in Bosnia the LCC Advisor, Dr Judith Darmady, has asked us to assist in training for ultrasound surveillance of DDH in Romania. IDEALS supported a Romanian doctor to visit the UK in June 2004 to attend a course in Dorset run by Dr Sally Scott and Professor Graff. On completion of this course it is hoped that a full training weekend will be imported into Romania similar to the ones carried out in Bosnia. On certification of a group of doctors in Romania it may be that a research project can be initiated in the country similar to the one that is now well under way in Bosnia.

8. LAPAROSCOPIC SURGERY

Key words and expressions: Minimally invasive, gallbladder, appendix, hiatus hernia, Royal College of Surgeons of England, cholecystectomy, appendicectomy.

The development of laparoscopic or minimally invasive abdominal surgery has gone apace and was progressing during the Bosnian war. It was therefore not surprising that we should be invited by the General Surgical Department at the State Hospital Sarajevo to assist them with the development of this speciality. In order to affect this one of the Consultant Surgeons, Mr Ranko Cović attended a full set of courses on three separate occasions at the Royal College of Surgeons of England during the autumn of 2001.

This training fully equipped Dr Cović to progress minimally invasive surgery in the State Hospital and the results proved to be very interesting. The examination of the charts reveals progress but also persistence of the effects of continued deprivation. The photographs show the steps for removal of a gall bladder via "puncture wounds"



MINIMALLY INVASIVE (LAPAROSCOPIC SURGICAL) REMOVAL OF A GALL BLADDER

(REPRINTED FROM BAILEY AND LOVE'S SHORT PRACTICE OF CLINICAL SURGERY 23RD EDITION)

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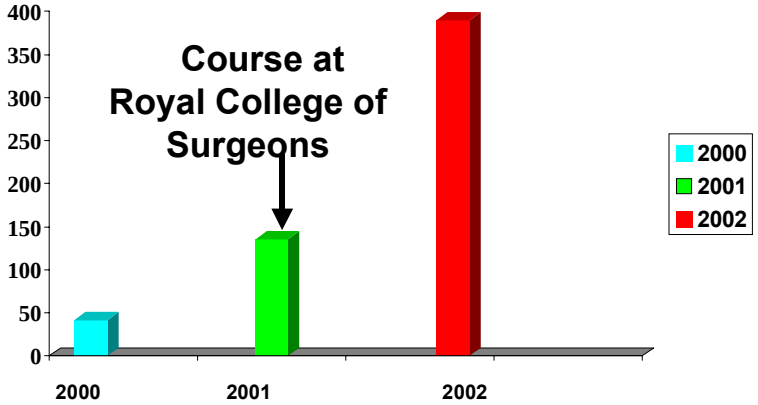
This demonstrates the small wounds that are required in such surgery and the magnified appearance of the internal anatomy that allows precise dissection of the gall bladder form the under surface of the liver. The diseased organ is delivered onto the surface of the abdomen and immediately enclosed in a sterile container to prevent contamination of the wound.

Quite obviously training is required in recognised establishments to allow surgeons to develop the high level of skills required

As can be seen from the charts not only was there a two year substantial progress in the actual numbers of cases operated on but also an improvement in the variety of cases

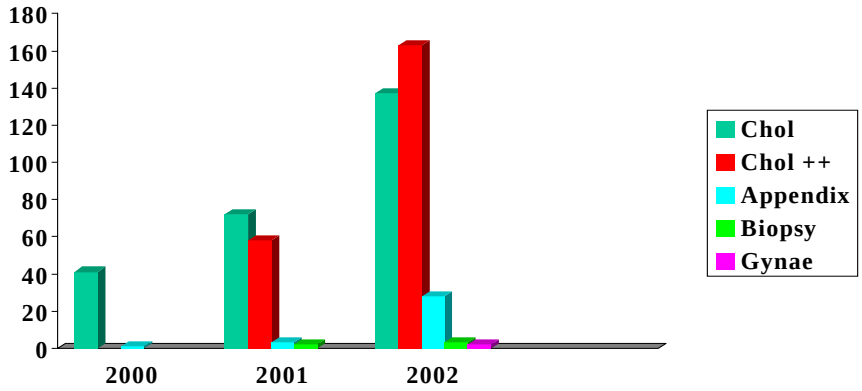
RESULTS OF TRAINING IN LAPAROSCOPIC SURGERY TECHNIQUES

ENDOSCOPY PROJECT RESULTS
TOTAL NUMBERS ENDOSCOPIC
OPERATIONS YEAR BY YEAR



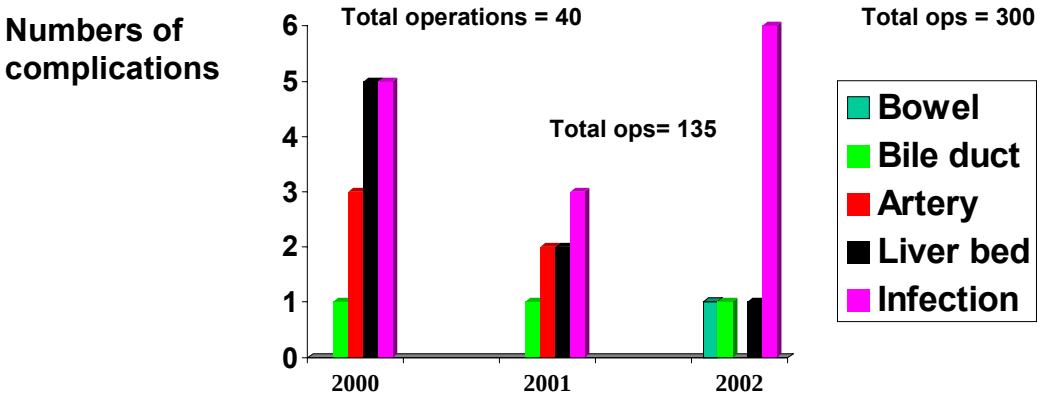
(1) SUBSTANTIAL INCREASE IN THE NUMBERS OF CASES UNDERTAKEN
AFTER THE TRAINING WAS COMPLETED

ENDOSCOPIC SURGERY TYPES OF OPERATIONS



(2) INCREASE IN THE TYPES OF OPERATIONS WITH COMPLEX GALL BLADDER OPERATION (Chol++) AND APPENDICECTOMY.

COMPLICATIONS (Injuries to Structures and Infection)



(3) OVERALL, THE TYPES OF COMPLICATIONS WERE FALLING WITH INCREASED EXPERIENCE BUT % OF COMPLICATIONS SUBSTANTIALLY FELL AFTER THE LAPAROSCOPIC COURSE WITH THE EXCEPTION OF INFECTION FOLLOWING REMOVAL OF THE GALL BLADDER.

It is interesting to note that the only complication that, year by year, remained at (nearly) a constant % level was wound infection. This problem always occurred following removal of a gallbladder, an organ, which is usually infected after obstruction with gallstones. The reason for the infection is that the sterile containers required to separate the gallbladder from the patient's skin as it was delivered form the abdomen was not available even six years after the end of the war. This information only became available after analysis of the results

This is a very pertinent illustration of how on the cessation of hostilities the effects of the war will continue in subtle ways. It illustrates the need for a charity such as IDEALS to remain involved in a focused manner long after hostilities have ended.

In summary this project has been an excellent one for delivering a high level of care to Bosnian patients. The work will continue and full evaluation of it will be possible after five years.

We are now engaged in developing a similar training project for the North West Frontier City of Peshawar and in addition for the purchase of equipment.

9. FRACTURE FIXATION

Key words and expressions: Sarafix, external fixation, severe soft tissue injury, infection.

It is now well recorded that within days of the beginning of the siege of Sarajevo there were so many casualties that medical supplies were almost completely depleted.

A very high percentage of individuals with non-fatal war wounds suffered from injuries to the limbs and there are, inevitably, complex fractures of the long bones. These fractures are associated with gross soft tissue injury and must be stabilised in order to preserve the limb. The majority of amputations following war injuries are due to severe soft tissue injuries many of which cannot be treated properly because of inadequate fixation of the complex fractures.

AN EXAMPLE OF SEVERE SOFT TISSUE INJURY WITH MASSIVE FRACTURES BEYOND ANY HOPE OF TREATMENT. EARLY ADEQUATE FRACTURE FIXATION ALLOWS THE MANAGEMENTOF SOFT TISSUE INJURES AND PRESERVATIONOF THE LIMBS

In War the civilian approach to treating trauma must be modified to take account of the large numbers of casualties and the more extensive wounds that are seen. Despite the extremely adverse conditions of war there is no excuse for accepting lower surgical standards although the lack of equipment, drugs and malnutrition of the patients will inevitably lead to a higher level of complications than would be seen in ordinary civilian practice.

An efficient method of externally fixing the fractures must be used. Clean closed limb injuries in civilian work will allow the insertion of plates or long nails but these devices will inevitably become severely infected and so external fixation must be used. One of the most remarkable achievements of the Bosnian war was the development of the external fixator Sarafix. This device was conceived, designed and the first prototype inserted within a period of five days during May 1992.

A SEVERE INJURY TO THE PELVIS AND THE UPPER THIGH CAUSED BY AN ANT-AIRCRAFT SHELL DIRECTED AT SARAJEVO POPULATION. THE COMPLEX FRACTURES ARE HELD WITH SARAFIX AND THE SOFT TISSUE INJURY IN THEGROIN AND UPPER /INNER THIGH CAN THEN BE TREATED.

Nearly 4,000 patients were treated with the apparatus and it can be safely described as a major life and limb saving device.

THE X-RAYS SHOW TWO EXAMPLES OF THE COMPLEX FRACTURES THAT ARE CAUSED BY HIGH ENERGY BULLET WOUNDS SUCH AS BULLETS OR SHELL FRAGMENTS.
TO STABILISE SUCH FRACTURES WITH PLASTER WOULD BE IMPOSSIBLE AND ALLOW TREATMETNOF THE SEVERE SOFT TISSUE DAMAGE AT THE SAME TIME.

At the end of the war the use of the device was independently reviewed by Dr Sukrjia Djozić and Professor Ismet Gavrankapetanović, however, no full-scale biomechanical studies were possible in Sarajevo.

IDEALS organised and paid for research to be undertaken under the supervision of Professor Alan Amis in the biomechanical laboratory at Imperial College, London. Mr A Shetty FRCS Orth., FRCS MCh Orth. and Dr Ulrich Hansom PhD jointly carried out the work with some meagre assistance from John Beavis! Dr S Djozić joined the team via a sponsored visit from Sarajevo and was thus able to assist in the scientific evaluation of Sarafix.

The work attempted to assess Sarafix in a worst-case scenario such as the one shown below. The patient was treated with a “rod” through the centre of the bone but it failed to heal. Success was obtained with the Sarafix device as seen on the left in which the healed, severe soft tissue injuries can be seen.

The experimental work involved using a device that simulated weight bearing across an artificial “fracture” held together by Sarafix and comparing the results with an external fixator that is commonly used in the UK. The “fracture” was a broom handle cut in half with the ends separated to simulate an injury with substantial bone loss as seen in the photograph. Despite its, apparently, primitive nature this is an entirely acceptable technique

THE EXPERIMENTAL APPARATUS WITH Dr HANSUM, Dr DJOZIC AND Mr SHETTY REVIEWING THE RESULTS

The results were quite remarkable in that the cyclic loading of the device showed that it was resistant to deformity of the fracture up to weight-bearing loads of 300kg. This means that an individual and the pull out strengths of the pins (the force required to actually pull the pins out of the bone) were nearly 500kg. These results were obtained with a very simple version of the Sarafix device and the more complex arrangements of pins would certainly enhance the strength of this apparatus. When compared with the standard apparatus the fracture buckled and stability was lost at a much lower weight-bearing load.

THE –DISGUISED – APPARATUS COMMONLY USED IN THE UK WITH THE SAME SET UP AS SARAFIX. THE FRACTURE LOST ITS STABILITY WELL BELOW THE WEIGHT LOAD THAT SARAFIX COULD TOLERATE AND THE "FRACTURE" IS SEEN TO BUCKLE.

- The experimental work will now continue in comparing Sarafix with other devices that are used in wartime situations. The clinical and research results will be presented for publication during 2004.
- There can be no doubt that it is a simple apparatus and this is what is needed in adverse circumstances.
- The hope for the future is that Sarafix will be seen as one of the major choices for the early fixation of complex fractures in a war situation and could become part of the shelf equipment in Europe for multiple patient (disaster) emergencies.
- The device could be easily used throughout the world for all types of fractures at a cost that is massively less than the complex devices that are at present available.
- There is a need for industrial development in Bosnia and based on the clinical and experimental results it is hoped to attract funding to establish a factory to manufacture this and other orthopaedic equipment in Sarajevo. This illustrates the way in which pure research based on war experience can be used to try and develop economic benefits for the battered society.

We are now extending the research work to assess the shearing forces from rotation that are required to disrupt the device with various types of fractures. When this work is complete we hope to interest an orthopaedic equipment manufacturer to produce this excellent apparatus for the "third world" at very low cost.

An exciting and important recognition is that we have been invited to include Sarafix, with a summary of its history and biomechanical properties, in the "War Surgery" section of the newly refurbished Hunterian Museum at the Royal College of Surgeons of England. The museum is due to reopen in early 2005

10. INDIVIDUAL RESEARCH AND TEACHING PROJECTS IN BOSNIA SUPPORTED BY IDEALS.

a). Osteomyelitis (bone infection) as a result of war wounds

Despite the best surgery that could be offered many patients suffer from chronic infection following war wounds. For many of these patients repeated surgery was unsuccessful and they suffered the complications arising from chronic infection and open suppurating wounds. It was estimated that as many as **15,000** patients in Bosnia suffered from this often forgotten problem as a result of the war. For IDEALS to be involved in helping to allay this problem was entirely compatible with its founding principles.

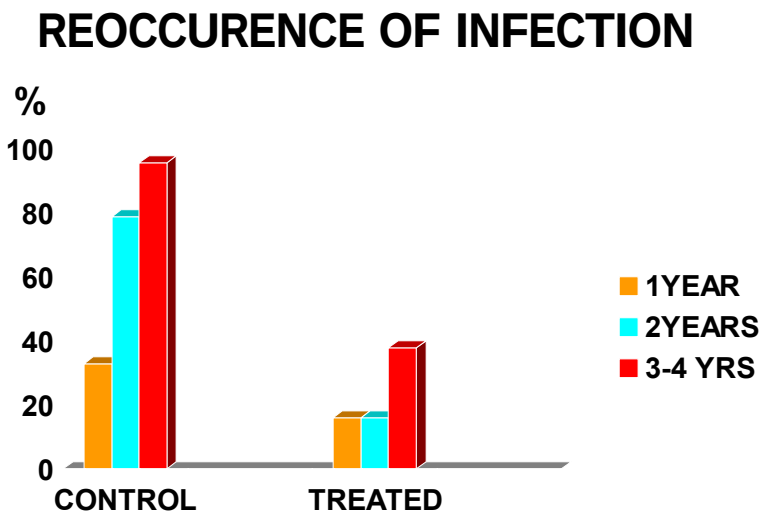
SEVERE CHRONIC INFECTION OF BONE AND SOFT TISSUES OF THE LOWER LEG AFTER SHELL FRAGMENT INJURY

There is no doubt that the stabilisation of long bone fractures using the Sarafix method prevented many more from suffering complications including infection but the very nature of high energy missile wounds is such that debris is sucked into the tissues and despite careful and early removal of infected particles some must remain.

At the request of Professor Ismet Gavrankapetanović JPB (using the resources of IDEALS) became involved in the assessment of patients with chronic infected war wounds. This led on to the development of a technique of radically treating these patients and thus lowering the overall incidence. It is, however, a condition that has almost malignant qualities with a characteristic of reoccurrence many years after the apparently successful ablation of the infection

A HIGH ENERGY BULLET WOUND THAT SHATTERED THE TIBIA AND CAUSED INFECTION. SIX YEARS AFTER THE WOUND CLOSED IT OPENED AGAIN AND INFECTION REAPPEARED REGULARLY UNTIL AFTER FURTHER SURGERY. EVEN NOW THE CONDITION MAY BE MERELY QUIESCENT AND NOT FINALLY CURED.

As the diagrams show the initial results of those undergoing radical surgical care (**TREATED** in the diagram) proved to be very successful when compared with those who underwent the standard treatment (**CONTROL**) but unfortunately after three years there was a gradual rise in the reappearance of long-term infection and therefore we must never consider that this is a war disease that is completely eliminated in any individual.



It emphasises the need for early and careful management of war injuries. The value of IDEALS supporting such research is also obvious because such work will identify best methods of treatment and report experience that may be used in the future. It also emphasise that individuals who become involved in war surgery, as volunteers must have the specialised expertise to deal with these cases rather than trying to import civilian techniques.

b). Assistance of Dr Sukrjia Djozić with a cohort investigation of war injuries

This investigation formed the basis for the Mastership Thesis for Dr Djozić and it was both a privilege and of value to assist him with this detailed work. As a result of this we have continued on with the detailed studies of Sarafix at Imperial College and further research is hoped to begin using biological models for assessing complex fractures and soft tissue injuries in an attempt to understand both the best methods of treatment and the biological basis for success or failure. The research project profile is now being developed in the hope that this could be initiated at University College Hospital.

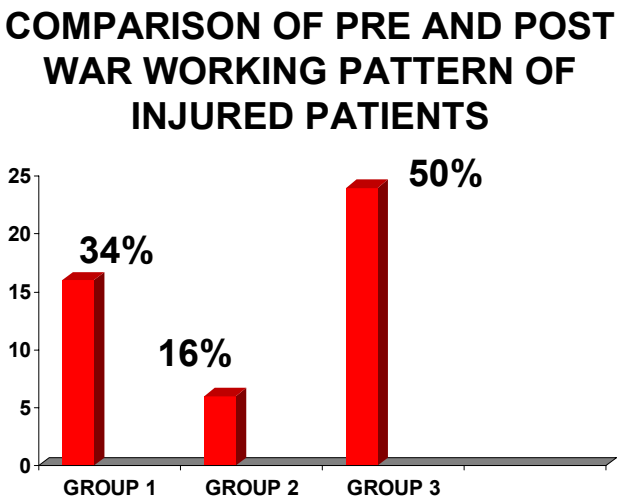
c). Combined Study Of A Five-Year Review Of Complex War Injuries Affecting The Tibia In The State Hospital Sarajevo And Civilian Injuries In University College Hospital Over A Similar Period.

The result was published in the European Health magazine, "Hospital Decisions". The paper is entitled "A Tale of Two Hospitals" and was first presented at the Trauma Care Conference in November 2004.

This work undoubtedly demonstrated the difference between the requirements for treatment of the two different types of injuries and it was suggested that there is a real need in these turbulent times for British and European surgeons to be trained in war injuries rather than acquiring the knowledge in the acute adverse circumstances ---see (1) in this section.

d). A Study Of Psychosocial And Physical Disability In Patients Injured In Sarajevo During The Bosnian War

This study revealed considerable persistent symptoms both of a psychological and of a physical nature. Perhaps the worst effect was psychological rather than physical but the social implication is well illustrated by the diagram, which revealed that the majority of patients five years after cessation of hostilities had failed to return to reasonable employment. Once again this demonstrates the long-term effects of war that are often ignored by those who believe that it begins and ends with violent hostilities. The summary of this particular piece of research – carried out under the joint auspices of University College London and IDEALS – is that when a war is over is it not just medical and technical individuals that must be flown in but people with expertise in economic reconstruction. Even today – eight years after the end of the war – the unemployment incidence in Sarajevo is nearly 30% among the young**.**



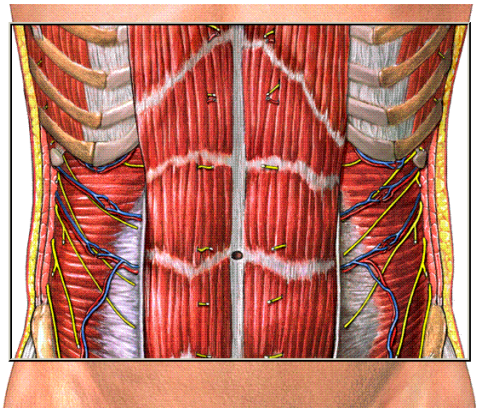
GROUP 1 RETURNED TO PRE-WAR WORK.
GROUP 2 ALTERED WORK DUE TO INJURY
GROUP 3 UNABLE TO WORK DUE TO INJURY

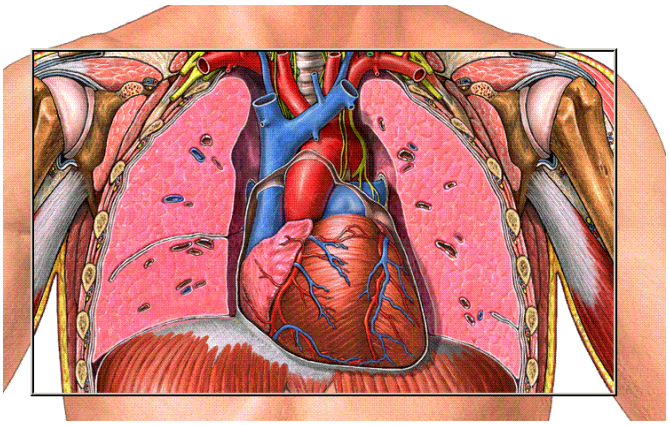
e). Assistance Of Anatomy Department Of The University Of Sarajevo Medical School With Computer Programme To Redevelop Teaching After The War.

The Medical school was effectively on the front line during the war and the damage was massive. Five years after the war the only teaching aids available for anatomy were carefully preserved chalk drawings.

Although of a high standard and part of the archive of the department they were insufficient and so it was suggested that a computer programme should be purchased by IDEALS.

As can be seen the illustrations of the anatomy are clear and detailed. The programme is till in use and assists with both teaching and examination of the undergraduates. Using the programme the whole human body can be dissected from the skin to whatever depth the student elects and each structure can be identified by an associated reference.





11. AZERBAIJAN

The Leonard Cheshire Centre has been deeply involved in the Azerbaijan refugee problem since the mid 1990's. It was the first major project started when Professor James Ryan assumed Directorship of the Department. As has already been stated the involvement of IDEALS only been short term.

- The donation of money for the continuation of the fast track surgical programme as well as the refurbishment and transport of donated infant incubators was obviously very useful. It was in fact the first use of resources from the "Bosnian Fund" that was the precursor of IDEALS.
- It was as a result of becoming involved on the periphery of this work that IDEALS was informed of the need to transfer a child from Azerbaijan to England for plastic surgery.

This child had suffered severe facial burns as a result of the explosion of a cooking stove and although he had undergone numerous operations in Russia and in Azerbaijan he was still unable to close his eyes due to scar contractures and he had gross mouth deformities.

Mr Roberts FRCS, Consultant Plastic Surgeon at Stoke Mandeville Hospital, offered his time and expertise to operate on the boy.

IDEALS paid for: -

- The hospital costs,
- His journey to England along with his father
- For an interpreter during the child's stay
- For accommodation close to Stoke Mandeville during the follow up period.

The photographs demonstrate that at the end of this time this boy was able to close his eyes and his mouth. The other characteristic that shines through is that despite his hideous scars he is a child who has charisma. Unfortunately since his return to Azerbaijan he has been lost to follow up but nevertheless it was a worthwhile involvement by IDEALS.

13. SIERRA LEONE

Research and developing the production of cheap prostheses is essential in many parts of the world. We were contacted by a small organisation that hoped to develop prostheses from local materials that had often been discarded. IDEALS financed a trip to Sierra Leone for the purpose of establishing these methods and we were happy to record that subsequently the research and development of the materials went ahead.

SUMMARY

- **IDEALS, and its predecessor the Bosnian Fund, has accomplished much and identified itself as an educational Charity with research programmes that allows experience gained in war and other adverse situations to be assessed and promulgated.**

- **The Charity has never lost its focus to help individuals via its teaching projects and, as can be seen with the extension of work with Sarafix, it may become involved in economic reconstructive activities.**

- **We have worked with no administrative costs and derived our income from a very narrow base.**

- **It is for others to judge the organisation but those of us working within the Charity believe that we have demonstrated our worth during the past 6 years.**