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SICOT Newsletter

Multiple Car Accident - Rabindra Sarobar

Road Safety Through Legal Advocacy – The Indian Experience

In this issue

Road Safety Through Legal Advocacy – The Indian Experience

'The next best thing to creating life is to save one'

Shanmuganathan Rajasekaran
SICOT President Elect – Coimbatore, India

The rising incidence of road traffic accidents is a cause of serious concern worldwide. While this is a global concern, the situation is particularly alarming in India as the country has earned the dubious distinction of having the highest number of road traffic accidents in the whole world. The recent WHO Global Safety Report 2013 states that India has a high fatality rate on roads, losing 100,000 lives to road crashes every year (139,091 in the year 2012), with a fatality rate of 10.83 deaths per 100,000 population (World Road Statistics data, 2011). The numbers have only increased since 2011 and a look at the following numbers will elaborate the gravity of the situation.

1. *There is one recorded road traffic accident death every five minutes. The number may be more as many deaths in the rural areas of the country are not recorded accurately.*
2. *Approximately 700,000 people are seriously injured with major disabilities which require prolonged hospitalisation and surgery. Many of them are permanently disabled and have to alter their lifestyle.*
3. *85% of the victims of these fatalities are men in the age group 20-50 years. The majority of these men are the breadwinners for their families.*
4. *The cost of primary treatment of all road traffic accidents in the country is Rs.7 lakh Crores. This almost amounts to 3% of the country's GDP.*
5. *More than 80% of the road accident victims are uninsured and hence have to pay the treatment cost from their own pocket.*
6. *There is no streamlined process of support to the disabled victims by means of Government social security.*
7. *Government statistics show that in the last couple of decades, the number of road accidents has increased by 4.4 times, accompanied by a 9.8 times increase in fatality and 7.3 times increase in the number of persons injured.*

The root cause of the malady is manyfold and the predominant issues include poor quality of road infrastructure, vehicles that are poorly maintained, inadequate training of drivers and poor enforcement of laws with respect to road safety. The mammoth increase in the population and the registered number of vehicles has hardly been matched by the increase in the road network in India. Though there has been more than a 100-fold increase in the number of registered motor vehicles, there has only been a four-fold increase in the road network. There is also the problem of a high number of pedestrians and two wheelers on the Indian roads and the general tendency for poor compliance to road safety rules and laws.

Overall, the situation is so alarming that WHO mentioned '*the dream of India to be a super power is evaporating on its roads*'. Central to the whole problem is the Government's apathy to the whole issue. The issue of road safety falls into the ambit of many departments and unfortunately the principle of 'everybody's responsibility is nobody's responsibility' prevailed.

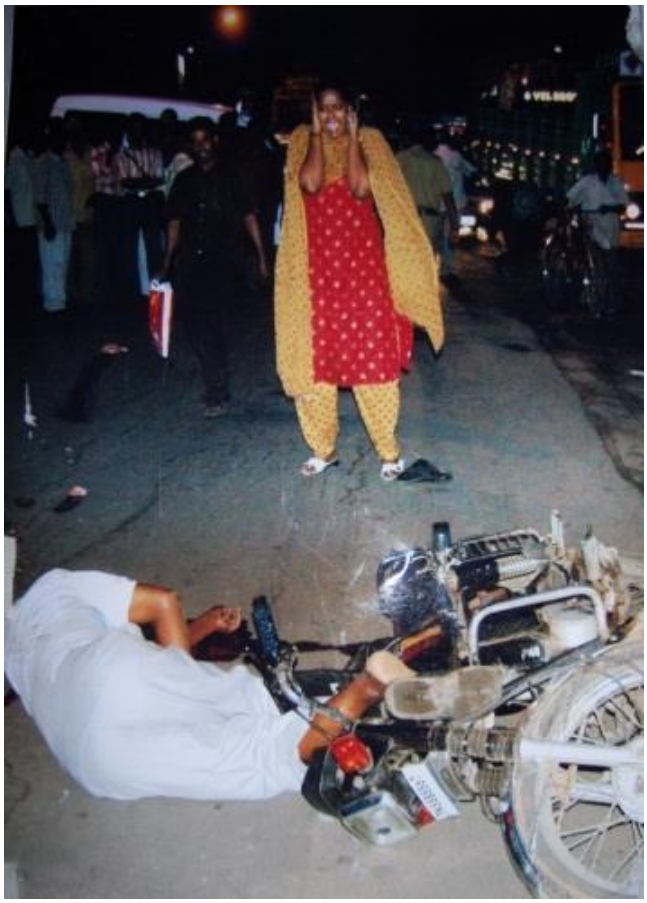
Taking cognizance of this grave situation, Dr Rajasekaran, as the President of the Indian Orthopaedic Association, approached the Supreme Court with a Public Interest Litigation against the Office of the Prime Minister and six principle Departments and Ministries concerned with road safety alleging callousness and dereliction of duty on this important safety issue. In particular, it was argued that a huge number of the citizens of the country are being injured and disabled for no fault of their own due to errant drivers and poor enforcement of road rules. This left them completely disabled and robbed them and their family of livelihood and happiness. This was against the 'fundamental right to live and to live to the fullest ability', a right that was promised to each citizen by Article 21 of the Constitution of the country.

The Public Interest Litigation was admitted for hearing by the Chief Justice of India and was heard by a bench comprising of **Justice P. Sathasivam, Justice Ranjan Gogoi** and **Justice N.V. Ramana**. After sixteen months of hearings and deliberations, the Honourable Court accepted the prayers of Dr S. Rajasekaran and ordered the setting up of a Supreme Court Empowered Committee consisting of a Judge of the Supreme Court, Retired Secretary of the Department of Surface Transport and a Social Activist to

look into the road safety issues and form guidelines for all states to follow. The Government has accepted the recommendations and has agreed to the setting up of the '**Road Safety Authority of India**' which will be an independent, legally empowered and fully functional agency accountable directly and only to the Central Parliament. The Road Safety Authority will look into all issues of road safety from education, enforcement and engineering and report to the Supreme Court every six months on the progress and compliance of the Government on all important issues. Some of the immediate provisions are listed in the table.

1. Establishment of 'Road Safety Authority of India'
2. The body will ensure:
   a. Uniformity of road safety rules amongst all states in India.
   b. Compliance of all states for minimum safety standards and strict enforcement of road rules.
   c. Liability of insurance authority in case person is denied treatment due to delay in sanction of insurance money.
   d. All vehicles must have compulsory third-party insurance.
   e. Strict enforcement of traffic violations, since every traffic violation is a potential RTA.
   f. Compulsory annual vehicular inspection.
   g. Road safety education should be incorporated in school curricula and inculcated in every citizen.
   h. Prescribe minimum education and qualification standards for drivers.
   i. Licensing should be based on biometrics to prevent multiple licenses issued to one person.
   j. Computerised licensing to track offences and introduce a point-based penalty system for offenders.
   k. Bar coding of vehicles and licenses to link to the penalty system, the annual fitness certificate of the vehicle, and insurance forms for instant information.
   l. Restrictions on the number of new vehicles registered and number of vehicles a family/ person can own, methods to ensure road-worthiness of vehicle, periodic license renewal, etc.

It is said that '**The next best thing to creating life is to save one**'. As orthopaedic surgeons, we have confined ourselves too long to just treating road traffic accident victims. However, even with the best of our ability, too many people die and many more are permanently disabled. It is important that we play an active role of advocacy against road traffic accidents. The Indian experience shows that it is indeed possible.



A wife in grief on seeing her husband run over in front of her eyes. Can we join hands to stop this tragedy?

Direct Anterior Approach for Total Hip Replacements

Javad Parvizi
Philadelphia, United States

Physicians in general and orthopaedic surgeons in particular are innovators. Thanks to these innovations, orthopaedic procedures are now among the most rewarding, cost-effective, and successful surgical procedures. One area of innovation in total joint arthroplasty relates to the surgical approach. Total hip arthroplasty, in its early era, used to be performed through the greater trochanter osteotomy. A randomised, prospective study by Dr Rothman from the Rothman Institute showed that there was no need to perform GT osteotomy during a routine THA. Thus, abandoning the GT osteotomy during THA led to simplicity in surgical approach and improvement of the care for patients. The desire to improve on surgical approach and other aspects of hip replacement has continued. One desire has been to seek a surgical approach that can allow THA to be performed without violating the periarticular muscles.

The direct anterior approach appears to fulfil the latter criterion [1]. The direct anterior THA has been performed by some surgeons for many decades. So what exactly has led to the resurgence of interest in this surgical approach? I believe there are three main reasons for the popularity of THA performed through the direct anterior approach. The first relates to the fact that we are performing THA in younger and more active patients, majority of whom also happen to be fully employed. Their desire for early return to work and activities has been one impetus [1]. The direct anterior approach, based on numerous level one studies, is superior to other approaches in terms of early return to function and patient satisfaction [2-7]. The other reason is that patient population undergoing THA, because of easier access to information, are much more informed today. These patients engage in extensive research about the procedure before choosing a surgeon and undergoing a procedure [1, 5]. Thus, patients have been seeking out surgeons who offer THA through direct anterior approach. The third and an interlinked reason to the latter relates to marketing [1, 5].

In an effort to prevent the disasters that have ensued as a result of false marketing or unintended damage caused by innovations that did not deliver on their promises, the direct anterior approach needs to be carefully evaluated. Many surgeons who use this approach have been engaged in generating data to support the superiority of the direct anterior approach, at least in the short term. Let's not dismiss the importance of early functional outcome such as ability to return to work, start driving, sleeping on the side, or walking without an aid. The demographics of patients undergoing THA today are indeed very different to those that received THA in previous decades.

I embraced direct anterior approach for a different reason. I have been using the direct anterior approach for many years to perform joint preservation procedures of the hip such as the pelvic osteotomy and the impingement surgery. It is not infrequent that I encounter patients with dysplasia undergoing pelvic osteotomy exhibiting severe cartilage delamination during intraoperative inspection of the joint. The ability to perform THA rather than osteotomy in these borderline patients under the same anaesthesia was the driving factor for me to embrace the direct anterior approach. The ability to perform THA using the direct anterior approach then allowed me to avoid using a second incision for patients who had undergone a prior impingement surgery and developed subsequent arthritis. As I performed more and more THA using the direct anterior approach, I began to appreciate its superiority and embrace the DA approach fully. I also began to appreciate other advantages of this approach. Performing the surgery in a supine position allowed for better assessment of the limb length, expedited patient positioning, and reduced operative time, particularly for the wound closure [1, 4, 5]. However, I, or more accurately, my patients paid a price. During the learning curve a few complications occurred. Because of the complete excision of the capsule in the early years to allow exposure of the femur and possibly not limiting the activity of the patients, some patients dislocated. The greater trochanter was fractured intraoperatively in another patient [8].

Although I believe direct anterior approach is here to stay, I do urge those thinking of embracing this approach to thoroughly assess the advantages and disadvantages of using this approach versus their try and tested routine approach. The best way to become familiar with this approach, in my opinion, is during the fellowship when methodical training can be delivered. We owe it to our patients to balance the gains against the increased complications that are likely to occur during the learning curve.

(continued on page 5)

ESWT in Orthopaedic Surgery

Kandiah Raveendran
SICOT National Representative of Malaysia – Ipoh, Malaysia

Extracorporeal Shock Wave Therapy (ESWT) was first used for the disintegration of renal and ureteric calculi. In 1988, the use of these acoustic waves was tried for the treatment of non-union in Germany. In the nineties, shockwave therapy was successfully used in the treatment of patients with tennis elbow and plantar fasciitis.

Today ESWT can be used to treat a wide variety of musculoskeletal conditions involving soft tissue and bone. The conditions most frequently treated with shockwave therapy are recalcitrant plantar fasciitis, rotator cuff tendinitis, tennis elbow, patellar tendinitis and Achilles tendinopathy. The success rate is about 80 percent.

The other big group is bony diseases including delayed and non-union and avascular necrosis of the femur. Currently, basic research and clinical studies are ongoing on the treatment of chronic skin ulcers, Peyronie's disease, erectile dysfunction, neurological disorders and ischaemic heart disease.

After many years of basic research on cellular mechanisms, we now have a better understanding of how ESWT promotes tissue healing. The mechanical pressure induces neovascularisation and stimulates healing probably through 'stem' cells.

The ISMST (International Society for Medical Shockwave Treatment) has formulated recommendations for the use of shockwave therapy (www.ismst.com).

Many orthopaedic surgeons have not heard of shockwave therapy or believe it to be akin to alternative medicine. It is not part of the curriculum. The FDA approved the use of ESWT for the treatment of plantar fasciitis in 2000 and the treatment of tennis elbow in 2002. There are many peer-reviewed scientific papers on the basic sciences and clinical use of ESWT and there are regular certification courses.

SICOT, acknowledging the advent of this relatively new technology, included shockwave sessions during the SICOT Triennial World Congress in Rio de Janeiro from 19 to 22 November 2014 so that orthopaedic surgeons and trainees from all over the world could avail themselves of this simple and effective therapy. The next ISMST Annual Congress will be held in Mendoza, Argentina, from 15 to 18 April 2015.

Expert Corner *(continued from page 4)*

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History of SICOT


ROBERT LOVETT


VITTORIO PUTTI

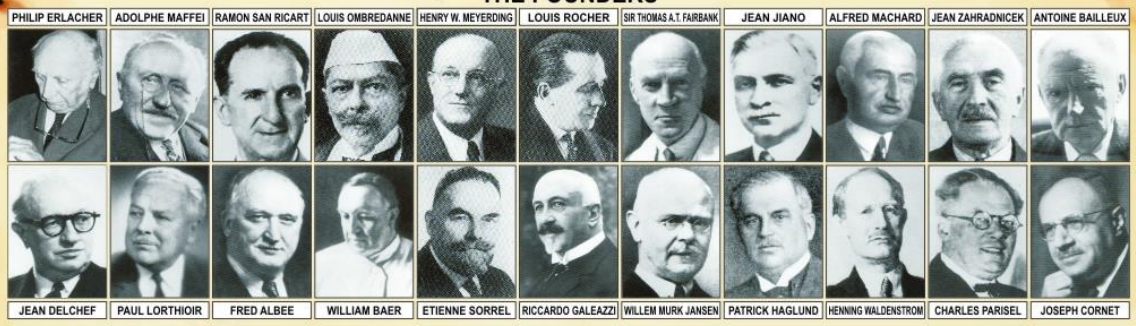

HANS SPITZY


FOUNDERS MEETING ON 10TH OCTOBER 1929 IN PARIS

The first reference relating to an international orthopaedic association, which eventually became SICOT, is found in a letter written by Robert William Lovett of Harvard University in Boston, United States, on 25 November 1913. Lovett was a member of the American Orthopaedic Association, the oldest of all orthopaedic associations (founded in 1887). He was, therefore, quite familiar with a national society over the 36 years prior to his international reach. Several international societies had already been formed for dermatologists, otologists, genito-urinary surgeons, and surgeons in general. His letter was sent to Professors Hans Spitzy of Vienna and Vittorio Putti of Bologna. They met that summer of 1914 in Courmayeur on the eastern slopes of Monte Bianco (Mont Blanc) to plan the form and nature of the international society and to fix a time for its inauguration. However, in the later half of 1914, World War I was declared and this idea was suspended until 1923. Lovett, Robert Jones and Putti met in Boston in 1923 to revive the plans but unfortunately the following year on 2 July 1924 Robert Lovett died in England. By 1929 many general surgeons had left practice to specialise in orthopaedic surgery and traumatology.

It was during this year that Fred Albee of the United States became the engine that powered the formation of the society. It was his energy that got others to share his enthusiasm for the society and to fix a date for its inauguration on 10 October 1929 at Hotel Crillon in Paris. In this endeavour he had the support of Sir Robert Jones, Harry Platt, A.S. Blundell Bankart and Sir Thomas Fairbank from the United Kingdom, Willem Murk Jansen of the Netherlands, Joel Goldthwaite and Robert Osgood of the United States, and Vittorio Putti from Italy. A committee consisting of Spitzy, Putti, Jansen and Louis Ombredanne was appointed to study and define bylaws.

THE FOUNDERS




SIR ROBERT JONES


DINNER MENU 1ST CONGRESS


1ST MEETING VENUE HOTEL CRILLON, PARIS (1929)

Year	Name of President	Country
1929 1930	Sir Robert Jones	United Kingdom
1930 1933	Willem Murk Jansen	Netherlands
1933-1948	Louis Ombredanne	France
1948 1954	Harry Platt	United Kingdom
1954-1960	Sir[ran J. Delchef	Belgium
1960-1963	Bryan McFarland	United Kingdom
1963-1966	Matthias Hackenruch	Germany
1966-1969	StenFriberg	Sweden
1969 1972	Robert Merle d'Aubigné	France
1972-1975	Floyd Jorgesen	United States
1975-1978	CalogeroCasuccio	Italy
1978 1981	Keti T. Dholakia	India
1981 1984	Maurice E. Müller	Switzerland
1984-1987	Robert de Marnelle	Belgium
1987-1990	Sir Dennis Paterson	Australia
1990-1993	Leonardo Zamudio	Mexico
1993-1996	Takao Yamamuro	Japan
1996-1999	Charles Sorbie	Canada
1999-2002	Rainer LP Kotz	Austria
2002 2005	John CY Leong	Hong Kong
2005 2008	Chadwick F. Smith	United States
2008 2011	Cody Bünger	Denmark
2011-2014	Maurice Hinsenkamp	Belgium

PRESIDENTS OF SICOT

Sir Robert Jones was invited to be the first President of the International Society and also the President of the first Congress in Paris on 5 June 1930. Subjects for the Congress were 'Congenital dislocation of the hip, its treatment after age of 15 and the results of treatment at any age'. The second subject was 'Injuries in the region of the wrist joint'. The Secretariat was established at Rue Montoyer 34 in Brussels, as the Secretary and Treasurer lived there. In fact it was located in Jean Delchef's house. The Society was called the 'Société Internationale de Chirurgie Orthopédique', SICO, until 1936. Traumatology was later added at the suggestion of Vittorio Putti and it became what we now know as SICOT. The Official Journal of SICOT, proposed as the International Journal of Orthopaedic Surgery in 1913 by Robert Lovett, came to existence as INTERNATIONAL ORTHOPAEDICS in 1977 by the efforts of Robert Merle d'Aubigné during the presidency of Calogero Casuccio.

The Challenges of a Female Trainee Orthopaedist

Peace Amaraegbulam
SICOT Associate Member – Enugu, Nigeria

The residency training in Orthopaedic Surgery in Nigeria is divided into two parts, with three different examinations organised by two postgraduate examination bodies: the National Postgraduate Medical College of Nigeria and the West African College of Surgeons. The primary examination qualifies you for entry into the residency programme. The first part of the training lasts a minimum of 30 months with rotations through different surgical specialties leading to the Part 1 examination before one starts the orthopaedic training properly. This second part ends with the Fellowship after one has satisfied the panel of examiners in the Part 2 examination.

Residency training in Orthopaedic Surgery is a male-dominated field world over, because of the perception among many that the field requires much energy which the female folks may not possess. Female enrolment in this field has therefore always lagged behind that of females in more 'female-friendly specialties' like Paediatrics, Anaesthesia, Public Health, and so on. Many of the males do not relate nicely with their female colleagues whom they often regard as being too daring. This attitude and others like it make life a bit difficult for the female orthopaedic trainee. Also, she may often have to combine this stress with the domestic stress of running a home.

Being the only female during my time of training, and being interested in 'extracurricular' activities like medical politics, made life not so easy. Many of my male colleagues were antagonistic. Some thought I was being overly ambitious, not being satisfied with the more 'female-friendly' specialties of practice. For others, the antagonism might have stemmed from some bit of intimidation, based on a biased mindset that I wanted to prove that I could do it. Meanwhile, I was only being myself.

The home front was not always easy, but I learnt to adapt. I had to teach my children to read and to work and play on their computers. We learnt to work together, sitting on the same table while I managed to study. Of course, I often got distracted by the bickering and childhood rivalries. I also had to go to bed at the same time as them, and try to get up in the middle of the night to continue my work. Sometimes, I was not so lucky: I slept through the night. But anyway, it was a good compromise to attend to all things.

The most important aspect was getting my husband's support during the training. Initially, this was not easy as he, being non-medical, often thought I had more allegiance to the profession and to my consultants than to him, the marriage and the children. It took months and years of submissive persistence to convince him otherwise. I am grateful for the advice of a senior female practitioner, though she was not an orthopaedic surgeon herself. She said, 'The only support you need is that of your husband. We live in a man's world and your colleagues may try to pull you down. If you have the home support, you will fly, baby'.

How right she was. The moment I cultivated my husband's support, how much I soared.

Today, I have qualified as a female orthopaedic surgeon in Nigeria. I have also passed the SICOT Diploma Examination and I have completed some international training while hoping to take on some others. I enjoy so much peace and satisfaction.

In the same words, I will also encourage other women to cultivate the one best support: that of the most important person in your life, whether you are married or in a relationship. With that alone, you will excel. Without it, you will be distracted. You have to be focused. Have a vision of the kind of practice you wish to have and consciously work towards it despite any distractions. Refuse to be intimidated by your male colleagues. Be friends with those who would be your friends, and lose no sleep over those who want to push you down. Orthopaedic Surgery may require much stress, but that is the inner strength much more than the physical.

Best wishes to all my orthopaedic sisters worldwide.

Trauma: Pelvis, Acetabulum & Shoulder

Prepared by Shalin Maheshwari & Mohamed Sukeik
SICOT Associate Members & SICOT Newsletter Editorial Board Members – Jamnagar, India & Harlow, United Kingdom

Questions

1. During head-on motor vehicle collisions occurring at highway speeds, airbag-protected individuals have a decreased rate (as compared to non-airbag protected individuals) of all of the following except:
   a. Severe closed head injury
   b. Facial fractures
   c. Splenic rupture
   d. Pelvic ring injuries
   e. Flail chest

2. Which of the following is a recognised predictor of mortality after hip fracture?
   a. American Society of Anesthesiologists (ASA) classification
   b. Post-operative weight bearing status
   c. Fracture comminution
   d. Fixation device used
   e. Femoral neck fracture location

3. A 23-year-old male is an unrestrained driver in a motor vehicle accident and sustains an unstable pelvic ring fracture. During fluoroscopic-aided fixation, a lateral sacral view is used for proper placement of which of the following fixation methods?
   a. Anterior column percutaneous screw placement
   b. Posterior column percutaneous screw placement
   c. Posterior iliosacral plating
   d. Supra-acetabular pin placement
   e. Percutaneous iliosacral screw placement

4. Which of the following methods accurately describes the measurement of tip-apex-distance as it relates to placement of a lag screw in the femoral head?
   a. Summation of the distance between the end of the screw and the apex of the femoral head on AP and lateral radiographs
   b. Distance from the acetabular teardrop to the tip of the screw on an AP radiograph of the hip
   c. Multiplication of the distance between the end of the screw and the apex of the femoral head on AP and lateral radiographs
   d. Distance from the centre of the lesser trochanter to the tip of the screw on an AP hip radiograph
   e. Summation of the distance between the tip of the greater trochanter and end of the screw on AP and lateral hip radiographs

5. Postoperative varus alignment of a subtrochanteric femur fracture treated with an intramedullary nail has been shown to be related to which of the following factors?
   a. Use of a piriformis entry nail through a greater trochanteric entry portal
   b. Use of a greater trochanteric entry nail through a piriformis entry portal
   c. Use of a lateral entry nail through a piriformis entry portal
   d. Use of a femoral distractor device to obtain reduction
   e. Use of a fracture table to obtain reduction

6. The pelvic spur sign on plain radiography is indicative of the following injuries?
   a. Transtectal transverse acetabular fracture
   b. Vertical shear pelvic ring injury
   c. Displaced H-type sacral fracture
   d. Both column acetabular fracture
   e. Anterior-posterior type III pelvic ring injury

7. A 70-year-old woman trips on the grass while playing golf and sustains a displaced comminuted intra-capsular femoral neck fracture. What is the optimal treatment for this patient?
   a. Open reduction internal fixation
   b. Bipolar hemiarthroplasty
   c. Total hip arthroplasty
   d. Unipolar hemiarthroplasty
   e. Traction and non-operative treatment

8. The posterior wall of the acetabulum is best visualised on which of the following radiographic views?
   a. Inlet pelvis
   b. Outlet pelvis
   c. Anteroposterior pelvis
   d. Obturator oblique pelvis
   e. Iliac oblique pelvis

9. Which of the following associated type acetabular fracture patterns is defined based on the fact that all

articular segments are detached from the intact portion of the ilium, which remains attached to the sacrum through the sacroiliac joint?

a. Posterior wall/posterior column
b. Transverse
c. T-Type
d. Anterior column/posterior hemitransverse
e. Both columns

10. For a patient with an unstable pelvic fracture, the amount of blood transfusions required in the first 24 hours has shown to be most predictive for what variable?
    a. Length of hospital stay
    b. Association with neurological deficit(s)
    c. Length of intensive care stay
    d. Cardiac collapse
    e. Mortality

11. The humeral head is normally:
    a. Retroverted 30 degrees to the transepicondylar axis of the distal humerus and its articular surface is inclined 150 degrees superiorly relative to the shaft
    b. Retroverted 30 degrees to the transepicondylar axis of the distal humerus and its articular surface is inclined 130 degrees superiorly relative to the shaft
    c. Anteverted 30 degrees to the transepicondylar axis of the distal humerus and its articular surface is inclined 150 degrees superiorly relative to the shaft
    d. Retroverted 45 degrees to the transepicondylar axis of the distal humerus and its articular surface is inclined 130 degrees superiorly relative to the shaft
    e. Anteverted 30 degrees to the transepicondylar axis of the distal humerus and its articular surface is inclined 130 degrees superiorly relative to the shaft

12. The following structures are related to the rotator interval except:
    a. Coracohumeral ligament
    b. Supraspinatus
    c. Subscapularis
    d. Transverse humeral ligament
    e. Coracoacromial ligament

13. A Stryker Notch view is utilised to diagnose which of the following?
    a. Hill Sachs lesion
    b. Bankart lesion
    c. Acromioclavicular joint injury
    d. Sternoclavicular joint injury
    e. Impingement

14. A West Point view is utilised to diagnose which of the following?
    a. Hill Sachs lesion
    b. Bankart lesion
    c. Acromioclavicular joint injury
    d. Sternoclavicular joint injury
    e. Impingement

15. What is a type II SLAP lesion?
    a. Bucket handle tear of the labrum with intact biceps anchor
    b. Fraying, intact anchor
    c. Bucket handle tear into the biceps insertion
    d. Superior flap tear
    e. Detachment of the biceps anchor

16. The primary restraint to anterior, posterior and inferior glenohumeral translation for 45-90 degrees of glenohumeral elevation is:
    a. Superior glenohumeral ligament
    b. Middle glenohumeral ligament
    c. Transverse humeral ligament
    d. Inferior glenohumeral ligament
    e. Coracoacromial ligament

17. The Crank test is used to diagnose which of the following pathologies?
    a. Rotator cuff tear
    b. Impingement
    c. SLAP tear
    d. Instability
    e. Cervical spine pathology

18. A Putti Platt procedure is an instability correction procedure and includes:
    a. Subscapularis advancement capsular coverage
    b. Subscapularis transfer to greater tuberosity

c. Transfer of biceps laterally and posteriorly
d. Coracoid transfer to inferior glenoid
e. Pants over vest procedure

19. A Boyd-Sisk procedure is an instability correction procedure and includes:
    a. Subscapularis advancement capsular coverage
    b. Subscapularis transfer to greater tuberosity
    c. Transfer of biceps laterally and posteriorly
    d. Coracoid transfer to inferior glenoid
    e. Pants over vest procedure

20. A Bristow procedure is an instability correction procedure and includes:
    a. Subscapularis advancement capsular coverage
    b. Subscapularis transfer to greater tuberosity
    c. Transfer of biceps laterally and posteriorly
    d. Coracoid transfer to inferior glenoid
    e. Pants over vest procedure

Answers

1. d
   Discussion: The referenced study by Loo et al studied the interaction between airbags/seatbelts and mechanism of the crash (i.e. front vs. side impact) and the injury patterns in these patients. They found that in frontal crashes, airbags reduced Glasgow Coma Scale severity in brain injury, facial fracture, shock, thoracoabdominal injuries and the need for extrication. Frontal airbags also had a protective effect on lower extremity fractures, but had no significant protective effect on pelvic fractures.
2. a
   Discussion: The ASA classification was initially developed in 1963 and has been shown to be predictive of post-surgical mortality in hip fracture patients. Basic categories are as follows: 1 = normal, healthy; 2 = mild systemic disease; 3 = severe systemic disease, not incapacitating; 4 = severe incapacitating systemic condition, constant threat to life; 5 = moribund patient; 6 = brain dead, organs being donated. Richmond et al looked at 836 patients treated for a hip fracture and found that this injury is not associated with significant excess mortality amongst patients older than age 85. However, in younger patients, those with ASA classifications of 3 or 4 have significant excess mortality following hip fracture that persists up to 2 years after injury.
3. e
   Discussion: The lateral sacral view is used to place percutaneous iliosacral screws. Sacral alar morphology has been shown to be variable from patient to patient. Therefore, intraoperative fluoroscopy is recommended. During placement of the screws, the L5 nerve root is at risk. Routt et al (1997) examined the sacral slope and sacral alar anatomy in cadavers and a series of patients. They determined that the pelvic outlet and lateral sacral plain films provide the best plain radiographic view of the sacral ala. They recommended routine usage of these views intraoperatively to guide screw placement.
4. a
   Discussion: TAD is a useful intraoperative indicator of deep and central placement of the lag screw in the femoral head, regardless of whether a nail or a plate is chosen to fix a fracture. A TAD of <25mm has been shown to minimise the risk of fixation cut-out in stable and unstable intertrochanteric hip fractures. Baumgaertner et al examined factors leading to the failure of sliding hip screws (SHS) in the treatment of 198 intertrochanteric fractures. They determined that the tip-apex distance (TAD) is a reproducible, standard measurement to predict SHS failure. The average TAD for successful fractures was 24mm while the average TAD for failures was 38mm. No screw with a TAD <25mm failed.
5. a
   Discussion: Usage of a piriformis (straight) nail through a greater trochanteric entry portal will bring the fracture into varus, as the greater trochanteric entry site's axis is lateral to the femoral shaft, and advancement of the nail causes the two axes to become colinear, leading to varus. The referenced study by Ostrum notes that usage of a greater trochanteric starting point is safe in obese patients; he recommends usage of a larger incision and maximum leg adduction. The referenced study by Winquist et al is a classic review of femoral nailing, and emphasises the importance of starting point selection and fracture reduction to maximise clinical outcomes (99.1% union rate in their series of 520 patients).

6. d
Discussion: The pelvic spur sign is indicative of a both column acetabular fracture. It is best seen on an AP or obturator oblique X-ray. The spur is the intact portion of the ilium, still attached to the axial skeleton and seen posterosuperior to the displaced acetabulum (typically medially displaced).
7. c
Discussion: Keating et al randomised 207 patients to be either treated with ORIF, bipolar hemi-arthroplasty, or total hip arthroplasty. There was no mortality difference among the three groups, however the rate of secondary surgery was highest in the ORIF group (39% compared with 5% in the group treated with bipolar hemiarthroplasty and 9% in the group treated with total hip replacement). Furthermore, the fixation group had the worst hip-rating-questionnaire and EuroQol scores at four and twelve months.
8. d
Discussion: The posterior wall is best visualised on the obturator oblique pelvic view. The obturator oblique and iliac oblique views make up the Judet views that are used to evaluate acetabular fractures, along with a standard AP pelvis radiograph. The obturator oblique pelvic view is best to view the anterior column and posterior wall in detail. The iliac oblique shows the profile of involved iliac wing, the posterior column, and the anterior wall. Letournel reviewed his classification and treatment protocols, based on his 22 years of experience at that time. He noted that perfect anatomical reduction of the acetabulum led to the best outcomes.
9. e
Discussion: There are 5 simple and 5 associated fracture types according to the classification system created by Judet and Letournel. The key feature which distinguishes both column fractures from other associated types is that all articular segments are detached from the intact portion of the ilium, which remains attached to the sacrum through the SI joint. Although the transverse plus posterior wall, T-shaped, and anterior plus posterior hemi-transverse fractures all show involvement of the anterior and posterior columns, they are not 'both columns' because a portion of the articular surface remains in its normal position, attached to intact ilium.
10. e
Discussion: Unstable pelvic fractures can be devastating injuries often resulting in significant morbidity and even death. According to the referenced study by Smith et al, fracture pattern and angiography/embolisation were not predictive of mortality in patients with unstable pelvic injuries. The three factors they found to be predictive were: increased blood transfusions in the first 24 hours, age >60 years, and increased ISS or RTS scores. Deaths were most commonly from exsanguination (<24 hours) or multi-organ failure (>24 hours).
11. b
12. e
Discussion: The interval includes the capsule and CHL that bridge the gap between supraspinatus and subscapularis. It is bounded medially by the lateral coracoids base, superiorly by the anterior edge of the supraspinatus and inferiorly by the superior border of the subscapularis. The transverse humeral ligament forms its apex laterally.
13. a
14. b
15. e
Discussion: Type I - Labral and biceps fraying, intact anchor; Type II - Labral fraying with detachment of the biceps tendon anchor; Type III - Bucket handle tear of labrum with intact biceps tendon anchor; Type IV - Bucket handle tear with detached biceps tendon anchor; Type V - SLAP + anterior labral tear (Bankart); Type VI - Superior flap tear; Type VII - SLAP + capsular injury.
16. d
17. c
Discussion: The Crank test includes full abduction, humeral loading and rotation and is used to diagnose SLAP tears.
18. a
19. c
20. d

References can be found at:
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