

In This Issue

- Knee reconstruction and the Anterior Cruciate Ligament
- Hot topics in ACL surgery
- Education and Research
- IRB junior world championships
- News update

St Vincent's SportsMed specialises in:

- Arthroscopy
- Sports Medicine
- Knee Ligament Reconstruction
- Shoulder Reconstruction
- Meniscal/ Cartilage repairs
- Orthopaedic Trauma

Knee Reconstruction and the Anterior Cruciate Ligament

We have all heard about athletes who are "out for the season" needing a knee reconstruction. What this usually refers to is that the athlete has ruptured their anterior cruciate ligament (ACL), a critical structure in the knee. The ACL is a link between the femur (thigh bone) and tibia (shin bone) at the knee. It functions to guide the knee through its range of motion, especially in a loaded situation. It also prevents sliding forward on the femur.

In situations of pivoting on the knee, so common in sport, exercise and many workplaces, the ACL allows the individual to change direction rapidly. When the ACL has been ruptured, symptoms of "giving way" or instability will be common, and makes playing sports such as soccer, rugby codes and basketball almost impossible.

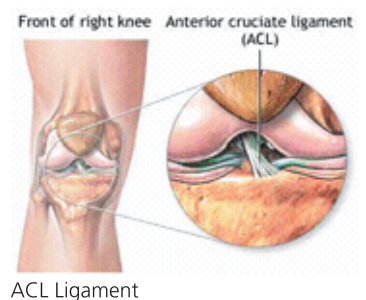
Long term damage to the knee cartilage is highly likely in a knee without an ACL, especially in active individuals. Studies indicate osteoarthritis occurs in a high percentage of such individuals.



Approximately 50% of ACL ruptures occur without contact with another player. Typically it occurs with a rapid change of direction. A "pop" is often felt. Within hours there is usually a large swelling in the knee (which is due to bleeding).

In trained hands, almost all ACL ruptures can be detected clinically. Sometimes swelling and pain may require further confirmation, either with re-assessment or an MRI.

Treatment in active individuals usually involves orthopaedic surgery, followed by a long rehabilitation program, involving physiotherapy and training. It takes at least 6 months to return to contact and collision sports.



ACL Ligament

Hot Topics in ACL surgery:

By Dr Simon Tan

- **Double Bundle ACL surgical reconstruction**
- **Allograft (cadaveric donor)**
- **Synthetic Ligaments**

ACL reconstruction has significantly evolved over the last 10 years. Advances in research have facilitated a better reconstruction of the normal ACL anatomy. With newer fixation techniques there has been a decreased requirement for post operative aids such as crutches and braces. There has also been an appreciation of the need for rehabilitation both pre and post procedure as well as accelerated rehab programs often allowing an earlier return to sport.

This has resulted in what I see as the current gold standard: **Single bundle 4 strand hamstring reconstruction of the ACL ligament.**

This is the surgery I currently perform at St Vincent's Sportsmed for all those requiring ACL surgery, from the elite basketball/football player to the social tennis player.

Research and recent advances are now moving into a number of different areas.

Double Bundle versus Single Bundle

Literature currently supports **single bundle** autologous hamstring reconstruction as the proven method in most patients. 1, 2

Double bundle reconstruction is a newer surgical method of placing 2 separate ligaments to form

a new ACL in the hope of recreating the 2 separate biomechanical bundles that exist in the natural ACL.

This double bundle technique is yet to be perfected. It has been proven to demonstrate better rotational control in the laboratory, but in terms of patient outcome, there has been no proven subjective benefit. As it is a more complex procedure, the risk of complications is also potentially greater. Studies are ongoing.

Allograft (Cadaveric donor)

Cadaveric allografts are used widely for ACL reconstruction in the USA. In Australia however the availability of appropriate specimens is significantly lower. Considerations in their



New ACL graft following reconstruction.



use include bacterial infection, slow viruses (CJD), immune reactions and inferior graft quality due to the high dose radiation which is required to sterilize the grafts. High dose radiation denatures the collagen of the grafts damaging the structure and integrity of the ligament reconstruction.

Synthetic Ligaments

The synthetic ligaments of the 1980's failed as they had poor biomechanical properties and the potential to cause synovitic reactions



4 strand hamstring graft

in the knee. New generation synthetic ligaments have tried to address this issue by using industrial strength polyester material, woven fibers and different sterilization processes. At this stage over 1000 of the new generation synthetic ligaments have been implanted (known as the LARS Ligament). To date, there have been no reports of synovitic reactions. 3,4

Benefits of these new synthetic ligaments include their high resistance to stretch, rupture and wear. The possibility of an inflammatory reaction is still a concern although not yet seen.

Given this history there has been some reluctance to insert these ligaments inside the knee joint. They are however, being frequently used in extraarticular knee surgery (outside the joint) such as medial ligament reconstruction and multi-ligament knee injuries.

This football season has seen the use of the LARS ligament in prominent football players' knee ligament reconstructions.

As in many areas of orthopaedic surgery, research into improved techniques and graft quality is always ongoing. Looking back just 10 years, arthroscopic ACL surgery was an emerging technique and yet it now predominates as the most common form of ACL reconstruction. This past decade highlights the enormous changes that have occurred within knee reconstruction but the surgery will continue to evolve as so many procedures do.

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Research and Education

The team of St Vincents SportsMed is committed to teaching at many levels.

Recently Dr Tan, Dr Burne and Dr Bathgate presented a seminar of the latest advances in orthopaedics and sportsmedicine to over 100 physiotherapists of the local community. Topics included syndesmosis injuries in the ankle, tendinopathies and rehabilitation after shoulder surgery. Information evenings are held regularly at St Vincent's Clinic. Please contact the clinic if you would like further information.

Dr Tan continues his position as the Australian Orthopaedic Association supervisor of surgical training at St Vincent's Hospital. He continues to run a dry lab at St. Vincent's Clinic where Sydney orthopaedic trainees can be taught arthroscopic processes.

Dr Tan continues his research affiliation with the UNSW. He is currently researching new suture techniques for the repair of the rotator cuff and is about to report results on the use of newer devices in shoulder AC joint reconstruction.

Dr Burne continues his affiliation with the UNSW as a visiting fellow of the Sports Physician training program and Dr Bathgate was recently appointed state training coordinator for the college of Sports Physicians.



IRB Rugby World Championships



Australian U20's win 4 out of 5 games in the IRB Rugby World Championships.

Dr Angus Bathgate has had a busy rugby season. As club doctor at East's rugby he has continued to provide an excellent service to the local rugby community. On a grander scale, he also continues his appointment as team doctor with the Australian Under 20 rugby team. The Australian Under 20 team competed at the IRB Junior World Championships in Wales in June. The Australians won 4 out of their 5 games, their only loss being to England. The junior world championship was ultimately won by New Zealand, who beat England in the final 38-3.

News around the office

Abbey Evans: Medical Secretary

Congratulations to Abbey who has just completed her Masters of Infection and Immunity with post graduate honours. She continues to work hard in the area of medical research and hopes to commence her PhD next year.

St Vincent's SportsMed Basketball

Well done to the St Vincent's SportsMed basketball team which has recently been promoted to the North Sydney A grade competition.

Dr Burne: Sports Physician

Dr Burne recently traveled to Europe with the Australian Opals basketball team on a warm up tour for the Olympics. He will head to the Beijing Olympics in August to provide medical support for the Opals as they aim for gold.



St Vincent's SportsMed wishes the Opals all the best in Beijing!

Go to www.stvincentsportsmed.com.au

Sports Physicians can see all patients at St Vincent's SportsMed at any sporting or exercise level, without a referral.



St Vincent's SportsMed is located in St Vincent's Clinic in Darlinghurst, Sydney

The aim of St Vincent's SportsMed is to maintain the highest degree of both professional and ethical standards in the service we provide to our patients. By continuing to uphold the principles of evidence based medicine and by being involved in ongoing research we will provide a secure foundation for surgical excellence. In addition, our strong commitment to customer service will always provide a caring and supportive environment to those in need.

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