Knee Joint Replacements – An Evolving Field

With over 13 years of data from the New Zealand Joint Registry and increasing use of new technology I thought it timely to review some aspects of knee joint replacement surgery in New Zealand.

In the year ending 2011 there were 6276 total knee joint replacements registered with the New Zealand Joint Registry, with this number increasing each year. Osteoarthritis accounts for over 95%, with obesity being one of the strongest associations of developing osteoarthritis (average BMI of 31)1,2. Rheumatoid arthritis, trauma and other inflammatory arthritic conditions account for the remainder of total knee joint replacements.

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“Knee joint replacement surgery provides significant pain relief and functional improvement as well as being very cost effective.”

However it remains one of the last options in a multi-modal approach to knee pain. Weight loss programmes, physical therapy, anti-inflammatory medications, cortisone injections, and other forms of knee surgery remain the mainstay in treating knee complaints. Knee joint surgery can be delayed or avoided with this approach, however a proportion of patients will have such severe pain and disability a knee joint replacement is the only option. As younger people require total knee joint replacements greater demands are placed on the knee joint replacements1,2. This can lead to early pain and loosening requiring the premature revision of the knee joint replacement. To increase the longevity of the knee joint replacement it is prudent to avoid activities such as running, jogging, jumping, or other high-impact sports. Realistic activities following total knee replacement include walking, swimming, golf, light hiking, biking, ballroom dancing, and other low-impact sports.

Technological Advances

Technology is continually being introduced in an attempt to improve the outcomes of knee joint replacement surgery. Two such innovations being used are computer navigation and case specific instrumentation. Computer navigation combines computers, infrared cameras, and potential complications from knee joint replacements and potential complications and monitoring, the limitations and improvement as well as being very cost effective.3

References

1. New Zealand Joint Registry – thirteen year report. New Zealand Orthopaedic Association
Cervical Spinal Surgery

Wakefield Hospital
Area: Neurosurgery
Article written by: Mr Agadha Wickremesekera, Neurosurgeon, Phone (04) 381 8120

Brachalgia and paraesthesia radiating down the arm raise the possibility of cervical disc prolapse causing cervical radiculopathy. Most will improve spontaneously over six to eight weeks give or take a month. During this period severe symptoms require strong analgesia and occasionally admission for inpatient pain management. Rest and cervical protection are mandatory until symptoms improve significantly. Investigations are indicated if symptoms persist or worsen after six to eight weeks, reflecting quality of life parameters. The demarcated distribution of paraesthesia can implicate the involved nerve root. Mild weakness may be associated with nerve root compression. Bilateral upper limb tingling, in particular altered sensation of both hands, difficulty of fine motor function and mild unsteadiness of gait are features of spinal cord compression. Reduction in a tendon reflex and demarcated sensory impairment are common signs of cervical radiculopathy, but not infrequently the examination may be normal. Upper motor neuron signs will usually be present in compressive cervical myelopathy.

Cervical radiculopathy is due to nerve root compression within the foramen caused by injury induced lateral disc prolapse. Cervical foraminal stenosis secondary to degenerative disease can also present with cervical radiculopathy secondary to uncovertebral osteophyte formation, see 1. Many patients with underlying degenerative disease will have acute symptoms after injury, due to annular tear and minor disc prolapse, often contentious with ACC.

Cervical x-rays check the alignment and bony appearance. Sagittal and axial MRI show soft tissue anatomy, especially nerve root and spinal cord compression, see 2. CT guided epidural injections can be therapeutic for a few days and help confirm the diagnosis. Sodium fluoride (NaF) nuclear medicine scans incorporate CT to potentially show the sites of origin of neck pain, proving useful in multilevel cervical spondylosis and mechanical instability. Cervical CT is a valuable tool for preoperative planning in conjunction with MRI.

Cervical foraminal stenosis is my neurosurgical treatment of choice for cervical radiculopathy due to foraminal stenosis secondary to lateral disc prolapse, uncovertebral osteophytopsis or facet arthropathy, see 3. Anterior discectomy is reserved for centrolateral disc prolapse or vertebral disc osteophyte complexes causing cord compression in addition to foraminal stenosis. Patients less than 50 years of age with preserved motion on flexion/extension may be selected for disc replacement, see 4 rather than fusion, justified by probable longer preservation of adjacent discs. Laminoplasty, see 5 or laminectomy is used for multilevel canal stenosis with cervical myelopathy. Anterior or posterior instrumented fusion is indicated in cases with mechanical instability.

Patients under 50 with preserved motion on flexion/extension may be selected for disc replacement.

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Images supplied by Mr Agadha Wickremesekera
A new procedure is available, known as Ankle Distraction Arthroplasty. This has been relatively popular in Europe for several years, but only recently has it gained popularity and evidence-based support in the North American literature. It has been undertaken in a limited fashion here in New Zealand.

Outline

The essence of this procedure is that the arthritic ankle is placed in a circular frame and then placed in distraction for a period of three to four months. There is no load through the ankle during this period, but it is permitted to move the ankle using a series of special hinges. There is an increasing body of evidence that this procedure leads to restoration of the articular surface, as has been confirmed on post-procedure MRI scanning.

The ideal patient for this procedure would be someone of a younger age (probably less than 40) who is unwilling to undergo ankle fusion. The patient also needs to be mobile, well motivated and able to cope with the considerable period of prolonged incapacitation that application of the ring fixator necessitates. This is not a procedure for someone who is lacking conviction or wants a quick and simple solution to their problem. Some international centres even require the patient to undergo a psychological assessment prior to the procedure in order to ensure they will cope with this technique.

How it Works

The ring fixator is applied under general anaesthetic in the operating room. The ankle can be arthroscoped at the time and any large bony spurs removed as well as microfracture of the joint surface performed. An acute distraction can then be commenced in the operating room. The aim is to distract the ankle up to about one centimetre and this can be done in the first ten to fourteen days postoperatively. Once the distraction is complete, the frame simply stays on and the routine cares for a ring fixator are put in place. After three to four months, the frame is removed under general anaesthetic and the patient commences rehabilitation. Full rehabilitation and resolution of symptoms from the procedure can take as long as 12 months and it would not be at less than 12 months that a final assessment of success or failure of the procedure would be evaluated.

Summary

Although this is not a routine procedure, it does offer an opportunity for those young patients with significant post-traumatic degenerative arthritis to consider as an alternative to the standard procedure in young people, which is ordinarily non-surgical measures or surgical arthrodesis.

References

1. Beaman et al. Ankle Arthritis; Deformity Correction and Distraction Arthroplasty
2. Gellman et al. Operative Techniques in Foot and Ankle Surgery
3. Fragomen et al. Hospital for Special Surgery NY, NY
4. Amendola et al. Prospective Randomized Controlled Trial; Fixed vs Mobile Distraction in the Treatment of Ankle Arthritis

It does offer an opportunity for those young patients with significant post-traumatic degenerative arthritis.
Welcome to the Acurity Health GP Conference 2013

The Board and management of Acurity Health Group are very pleased with the ongoing levels of enthusiasm and support for our GP Conferences, now in their 16th year. We place great value on our relationship with the general practice fraternity, and are delighted to once again bring you this event.

These conferences not only provide significant educational value but also an outstanding networking opportunity, driving greater communication between the specialist consultants who work in our hospitals and General Practitioners from throughout central New Zealand.

You will notice a change of company name reflected in this year’s conference title. Central to the rebranding decision was our desire to implement a brand that is equally applicable across all of the hospitals and activities that we participate in. The Acuracy name was selected to evoke qualities of accuracy, security, cure, professionalism and stability.

For those of you who have attended previously, we look forward to welcoming you back. To those who will be new to the Acuracy Health GP Conference, we welcome you and look forward to meeting you at the Conference.

Paul Quayle
Commercial Manager,
Acuracy Health Group Limited
New Consultants

Acuity Health welcomes the following consultants to our Royston and Wakefield hospitals. Please contact them directly if you would like more information about their specialties.

Mr Stephen Andrews
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Stephen is a consultant Orthopaedic Surgeon at Royston Hospital, Hastings and Hawke’s Bay District Health Board. Originally from Wellington, he trained at Otago Medical School and Wellington Clinical School. Following his orthopaedic training in New Zealand he completed fellowships in Upper Limb surgery in both New Zealand and Western Australia. Stephen is available to see patients with any orthopaedic condition and has sub-specialist interests in:
- Hip and knee arthroplasty
- Shoulder, elbow, and hand surgery.

Mr Angus Wickham
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Angus is an orthopaedic surgeon who consults and operates at Royston Hospital in Hastings and consults at the Carlyle Medical Centre in Napier.

Speciality Orthopaedics

Background
Angus gained his medical degree from Otago University in 2001 and completed his orthopaedic training in 2010. He then spent one year in Melbourne at both Monash Medical Centre and Cabrini Private hospitals as a fellow in lower limb orthopaedics.

His special interests
- Hip and knee joint replacement including complex and revision procedures
- Sports injuries of the knee and shoulder
- Arthroscopic and computer assisted surgery
- Foot and ankle problems.

Angus is available to see patients with any orthopaedic condition and is committed to enhancing and maintaining activity throughout all stages of life.

Dr Alex Popadich
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Alex is a General and Endocrine Surgeon who consults at the Wakefield Specialist Medical Centre, 99 Rintoul Street, Newtown, Wellington and operates at Wakefield Hospital also in Newtown, Wellington.

Speciality General and Endocrine Surgery

Training
Alex finished her undergraduate medical training at Otago University in 2002. She undertook her general surgical training in New Zealand and was awarded her Fellowship of the Royal Australasian College of Surgeons in 2010. Alex undertook two years of post-fellowship training specialising in Endocrine Surgery at the Royal North Shore and Hornsby Hospitals in Sydney. Currently she works as a Consultant Surgeon at Wellington Regional Hospital and is also a Senior Clinical Lecturer at the University of Otago. She is completing a Doctorate of Clinical Surgery with the University of Sydney.

Special interests
- Surgical management of thyroid disorders including thyroid cancer and familial syndromes
- Surgical management of parathyroid disorders
- Minimally invasive thyroid and parathyroid surgery
- Laparoscopic gallbladder surgery
- Laparoscopic hernia repair.

Alex strives to provide quality healthcare that is respectful of and responsive to the individual patient’s needs and preferences.

Mr Andy Meighan
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Andy is an Orthopaedic Surgeon who consults at the Marlborough Orthopaedic Clinic, at Waiau Hospital in Blenheim, and at Wellington Sports Med, which is located at ASB Stadium, Kilburne in Wellington. He operates at ChurChill Trust Private Hospital and Wairau Hospital in Blenheim, and at Wakefield Hospital, in Newtown, Wellington.

Speciality Orthopaedics

Training
Andy has undertaken orthopaedic training in Glasgow and fellowship training in Auckland and Edinburgh. He is a member of the New Zealand Knee and Sport Surgery Society. He is also in Newtown, Wellington.

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Speciality Orthopaedics

Training
Andy has undertaken orthopaedic training in Glasgow and fellowship training in Auckland and Edinburgh. He is a member of the New Zealand Knee and Sport Surgery Society. He is also in Newtown, Wellington.

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Speciality Otolaryngology

Training
Campbell completed his ENT training in New Zealand in 2008 after rotations throughout the country. His rhinology fellowship was in Auckland in 2010. He spent a further year working and observing rhinologic surgery in Sydney in 2012.

Background
Campbell worked at Wellington and Hutt Valley Hospitals in 2011 and moved to Australia last year where his wife completed her fellowship. They are both delighted to return as otolaryngologists to the region, with their family.

Specialising in
- Nose and sinus surgery with its extended (orbital and skull base) applications
- Complex frontal sinus pathologies
- General adult and paediatric ENT conditions and surgery.
Thyroid Nodules and their Management

Thyroid nodules are common, up to five percent of the general population will present with palpable nodules and up to 50% will have incidental nodules discovered on imaging. The majority of these nodules are benign, with the malignancy rate being in the order of five to 15%. So how do we decide what to do with all these thyroid nodules?

The history of the nodule may be important in predicting its malignant potential. If the nodule has grown quickly, caused voice change or has presented along with neck lymphadenopathy it is more likely to be malignant. A history of head and neck irradiation and a family history of thyroid cancer are also very important as are age less than 20 and greater than 70 years.

The most important investigations for any thyroid nodule are:

1. Thyroid Stimulating Hormone (TSH) and Thyroid Hormone Levels
Measuring TSH and thyroid hormone levels will exclude thyrotoxicosis. Patients with thyrotoxicosis may be treated with medication or radioiodine, but a significant proportion will require surgery especially if they have a toxic multinodular goitre.

2. Ultrasound of the Neck and Thyroid
The American Thyroid Association\(^1\) has revised guidelines recommending that all thyroid nodules should be investigated with a thyroid ultrasound.

3. Fine Needle Biopsy (FNA)
All thyroid nodules that are one centimetre in diameter should have a FNA biopsy. These nodules that are less than one centimetre in diameter should also be biopsied if they have suspicious features on the ultrasound scan or the patient has a history of irradiation exposure in childhood or a first degree relative with thyroid cancer.

FNA is the most accurate investigation in the evaluation of thyroid nodules as it triages patients with a thyroid malignancy to the appropriate surgery.

In 2009 the National Cancer Institute\(^2\) in the USA developed uniform terminology for reporting thyroid cytopathology (the Bethesda system). There are six diagnostic categories and each category has an implied cancer risk, see below.

The Bethesda System for Reporting Thyroid Cytopathology

<table>
<thead>
<tr>
<th>Diagnostic Category</th>
<th>Risk of Malignancy %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Non-diagnostic of Unsatisfactory</td>
<td>1-4</td>
</tr>
<tr>
<td>2. Benign</td>
<td>0-3</td>
</tr>
<tr>
<td>3. Atypia of Undetermined Significance (AUS) or Follicular Lesion of Undetermined Significance (FLUS)</td>
<td>5-15</td>
</tr>
<tr>
<td>4. Follicular Neoplasm</td>
<td>15-30</td>
</tr>
<tr>
<td>5. Suspicious for Malignancy</td>
<td>60-75</td>
</tr>
<tr>
<td>6. Malignant</td>
<td>97-99</td>
</tr>
</tbody>
</table>

Recommended Management

The recommended management\(^3-5\) for patients who present with nodules in these categories are:

1. Patients with non-diagnostic/unsatisfactory biopsy results should undergo repeat FNA using ultrasound guidance.
2. Patients with benign nodules should have a follow-up with an examination and ultrasound.
3. Patients with AUS/FLUS nodules should undergo a repeat biopsy.
4. Patients with follicular neoplasm should undergo a thyroid lobectomy for a definitive diagnosis.
5. Patients with nodules suspicious for malignancy should undergo a total thyroidectomy or hemithyroidectomy.
6. Patients with malignant nodules should undergo a total thyroidectomy and might also require lymph node dissection.

As thyroid nodules are common and may be present in 50% of the population on imaging, the Bethesda System as well as the American Thyroid Association guidelines have provided us with evidence based recommendations for their management.

References

On 30 October 2012 Wakefield Hospital proudly hosted a ‘Live Operating’ session as part of the pre-conference programme for the 65th Annual General and Scientific Meeting of the New Zealand Society of Otolaryngology Head and Neck Surgery.

Mr Simon Robinson, Otolaryngologist, Wakefield Hospital, worked with Mr Agadha Wickremesekera, Neurosurgeon, Wakefield Hospital, and Adelaide based, Professor of Otolaryngology, Peter-John Wormald in the ‘live operating’ session which was broadcast live from Wakefield Hospital’s streamlined Education Centre.

The operating surgeons were able to communicate from the digital OR with visiting surgeons in the Education Centre whilst live operating images were being streamed. The communication was two-way – enabling question and answers as the cases proceeded.

The surgeries performed were:
- Endoscopic sinus surgery with a focus on management of complex disease involving the maxillary and frontal sinuses
- Endoscopic skull base surgery
- Functional rhinoplasty
- Septal reconstruction.

Hutt Valley DHB had recently completed a major operating theatre expansion and offered for tender a re-locatable two theatre, four recovery bed ‘POD’. Following approval from Hastings District Council for a temporary five year permit, the POD was deconstructed into three parts and transported from Wellington by road across the Rimutaka Hills to its new site in the rear carpark of Royston Hospital. Placed on concrete piles, a corridor was constructed to link the 256 sqm (13m x 20m) POD to the main theatre corridor.

Upgrading hospital facilities while minimising disruption to patients and staff always presents a challenge. Royston’s three operating theatres were of disparate size with the smallest requiring significant expansion to accommodate the ever increasing instrumentation and equipment required for surgery in the 2000s. With high utilisation of all three theatres, decommissioning a theatre for an extended period of four to five months would have been untenable.

Latest Technology
The POD was rejoined, connected to services and commissioned in November 2012. Expansion of Theatre One commenced with demolition of two existing walls over the Christmas shutdown. New Stryker operating lights, latest technology surgical and anaesthetic pendants with iSuite capability features have now been fitted and a fantastic new look theatre was re-commissioned in March.

Meeting Demand
The extent of this expansion would not have been possible without the POD facility. Demand for elective surgery in the Hawke’s Bay has culminated in a POD theatre scheduled to be used as an additional fourth theatre from August. Looking forward, planning for a permanent solution to expand facilities at Royston is under review.
GP Survey

We value your feedback and will use your comments to improve this magazine. Go to our ‘For our GPs’ website and complete the brief survey – www.acurity.co.nz