

ePoster Session 5: History of Urology

Tuesday 27 June 09:00 - 10:10hr

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P5-1 The earliest concept of penile preserving surgery for penile cancer: Hugh Hampton Young (1870 - 1945)

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Introduction: At the turn of the 19th century surgical treatment of penile cancer involved complete emasculation, i.e. removal of the scrotum and its contents, the crura and shaft of the penis bringing the urethra out as a perineal urethrostomy. This was the radical approach devised by Hugh Hampton Young (HHY) in the early 1900s. In 1931, he published a modification to his original operation allowing patients to void 'normally' and, in some cases, to achieve sufficient erection for penetrative intercourse.

Methods: We have reviewed the literature for the early management of penile cancer and the original publication of 'Young's radical operation for cancer of the penis and glands of the groin.' From this we report the surgical techniques adopted by HHY many of which are still utilised today.

Results: Following dissection of post mortem specimens HHY concluded that it was unnecessary to remove the scrotum and its contents in a radical penectomy. Young's modified radical penectomy involved amputating a portion of the penis, the lymphatics at the base of the penis and en bloc dissection of the fat and lymph glands of the prepubic area, both groins and upper thighs. Their series had good cancer and functional outcomes.

Conclusion: HHY provides a fascinating report of radical surgery for penile cancer allowing excellent cure rates but with maintaining some erectile function and 'normal' voiding. This concept of penile preserving surgery is at the forefront of modern day treatment of penile cancer but we must never forget the pioneers of these surgical techniques.

P5-2 Edward Martin: The father of clinical andrology

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Edward Martin (1859-1938) graduated from the University of Pennsylvania, before obtaining surgical residency in Philadelphia. He published extensively and progressed to Professor of Surgery. During this time he developed an interest in genitourinary conditions, particularly male infertility.

He initially studied 192 sterile couples and noted that 17% were azoospermic. He reported the diagnostic need for semen analysis and that to determine the male's potential fertility, the sample must be fresh. He also noted that sperm motility could be preserved by cooling and that due to variability repeated samples were necessary. Morphological variation was also documented (1902). Having demonstrated that epididymal infection was at that time the major aetiology of obstruction, Martin became the first surgeon to successfully treat obstructive azoospermia, performing an epididymovasostomy on a patient with gonococcal infection (1903). He incised the epididymis and, after expressing fluid, created a vaso-epididymal anastomosis. After 6 weeks, the patient's semen contained sperm and a pregnancy ensued. Subsequently, he performed epididymovastomies on 11 men with epididymal obstruction, achieving patency and pregnancy rates of 64% and 27%, respectively (1909). He also documented that successful epididymovasostomy required vas patency and that intraoperative testing was an important procedural component. During recruitment, Martin observed that azoospermia could have two causes, namely ductal obstruction and spermatogenic failure.

With the outbreak of War, Martin abandoned research and enlisted in the Medical Corps. He left the Army in 1919 and subsequently retired from medicine. In 1938, he died from nasopharyngeal carcinoma. It is unfortunate, and perhaps ironic, that the first true clinical Andrologist passed away childless.

P5-3 Norman Gibbon: A revolutionist in neuropathic bladder management

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Scottish Urologist, Norman Gibbon (1918-2008) significantly improved the management of patients with neuropathic bladder. Born in

Glasgow, he attended Greenock Academy before progressing to Liverpool Medical School. After graduating (1941), he enlisted in the Navy and attended the Normandy Landings. After the war, Gibbon returned to Merseyside where he pursued a surgical career. Under Charles Wells tutelage, he undertook research on the management of the bladder in paraplegic patients at Southport General Hospital. Here, he studied their urodynamics using a home-made glass cystometer. He published extensively and was one of the first to document the effect of high pressure generated by the neuropathic bladder upon the upper urinary tract. For those patients whose bladder's reflex arc failed to be abolished by pudendal neurectomy or intrathecal alcohol block, and who did not want a long-term catheter, he devised the external sphincterotomy procedure. Initially a 'cold-punch' technique, he later refined it using a Colling's knife. Noting that many of his long-term catheterized patients, especially those with sensory loss, had high rates of urethritis, epididymitis, perineal abscess and ascending infection he blamed the catheters used. Being short, thick-walled and chemically irritant, they inevitably led to catheter-associated infection. Hence, Gibbon developed the catheter that bears his name (1958). It was long, fine (2.5mm), thin-walled (0.5mm) and required minimal fixation; consisting of polythene it also did not irritate the urethra. This led to reduced rates of infection.

Thus, Gibbon revolutionized the urological management of paraplegic patients and deservedly earned the prestigious St Peter's Medal (1986)

P5-4 'The Club of Distinguished Prostates' – The Bowery Series

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Introduction: From 1951 Perry Hudson investigated prostate cancer using the homeless and destitute of The Bowery, Manhattan. An article revisiting the story in 2013 led to widespread press coverage and criticism.

Methods: A non-systematic literature search was performed on Hudson, the Bowery series and the Skid Row cancer study. Online medical and popular literature sources were used.

Results: After training at Johns Hopkins, the talented young Hudson (33) was appointed

Head of Urology at Francis Delamere Hospital in New York. Responsible for 'a floor full of laboratories' he initiated an ambitious prostate cancer research programme, to assess prevalence and test his belief that an early form of the disease could be curable. The destitute of Bowery 'flop houses' were ideal recruits, without pre-existing prostate symptomatology and easily persuaded to participate, for the promise of a clean bed, food and 'being called Mister.' A contemporaneous social commentary reports men were 'delighted at being accepted into the club of distinguished prostates'!

Patients underwent extensive investigations with over 1000 undergoing open perineal biopsies. Perineal prostatectomy, orchidectomy and oestrogen treatments followed if cancer was found – a non-standard combination at the time. No evidence of written consent is recorded, nor it is thought, were potential risks explained. Nonetheless, results were published and cited widely. Hudson's biggest contribution being that early, treatable, cancer was detectable by biopsy.

Conclusions: Compared to modern research governance and consenting practices, the series is easily condemned as unethical. However, this story highlights the blurred line in medical history between treatment and experimentation.

P5-5 The Aero-urethroscope

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Introduction: While the development of the urethroscope and the cystoscope are linked, the two procedures of urethroscopy and cystoscopy were quite separate. The principle of using air-insufflation to visualize and treat diseases of the urethra gave rise to the aero-urethroscope. We report on its creation and usage.

Methods: A systematic search of the literature using the keywords 'aerourethroscope', 'aerourethroscopy', 'air + urethroscopy' and 'air + urethroscope' was conducted.

Results: The earliest report of using air-inflation in male urethroscopy was by Geza Von Antal of Budapest in 1887. The instrument was a modified Grunfield urethroscope using an external light source and head mirror to reflect illumination down the scope. It was designed to distend the urethral walls so that all inflated portions could be inspected. In 1896 in London, J Swift Joly published in the

Lancet 'An operating and observation urethroscope'. George Luys in 1902 added a magnifying lens to allow detailed examination. It was recommended that urethroscopy was carried out a day before cystoscopy in case any obstruction was encountered. Although cystoscopy was felt to be a specialist procedure, urethroscopy was deemed to be suitable for non-specialists such as GPs and venereologists. The technique of air cystoscopy was soon abandoned but the aero-urethroscope remained in use into the 1950's.

Conclusion: Air appeared to be a comfortable medium to distend the urethra for maximal visualization. Despite the introduction of irrigant fluid for cystoscopy, urologists continued to use aero-urethroscopy as a separate distinct method for many years after the abandonment of air cystoscopy.

P5-6 The Force awakens: the history of LASER in urology

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Introduction: Once the domain of science fiction, and James Bond villains; Light Amplification by the Stimulated Emission of Radiation, or LASER, is now a part of daily life in any urology centre. We look back over the last 60 years, and examine the innovators and innovations that have shaped LASER urology, and consider the future for this once futuristic tool.

Methods: A search was undertaken using library and internet sources.

Results: With the advent of Theodore Maiman's working LASER in 1960, the path was set for its use in urology. Only 6 years later Parsons et al discussed its use in a canine study on bladder flaps. In 1968 Mulvaney was first demonstrating the use of Maiman's ruby LASER for stone fragmentation. The main issue was, sadly, a dangerous side effect of heat production. The search continued for LASER that could be adapted to the endourologist's natural habitat of enclosed spaces with friable tissue. This heralded the use of coumarin pulse dye, and holmium LASER. It was, however, not until the early 90s that LASER use became commercially available for lithotripsy. Since then LASER has been developed and is now used in almost all subspecialties of urology from oncology to benign prostate disease, and has been considered the first choice in stone surgery for the last 15 years.

Conclusion: LASER use in urology has developed exponentially since its conception in 1966. The pioneers, both physicists and medics, have left us with a legacy that continues to grow.

P5-7 How the unbelievable becomes routinely believable: advancements in peri-operative management and enhanced recovery in urology since the Eighties

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Introduction: For the current generation of urology registrars there is no trace of a memory of routine 2 week admissions for nephrectomies; or of cystectomy involving a Month's hospitalisation, bed rest and 50% transfusion rates. The advancements in minimal access surgery, anaesthetics, vessel sealing devices and leaps in post-operative multimodal management have changed modern surgery beyond belief during the progression of one generation. We aim to evaluate those advancements which were once thought far-fetched, exploring their development and impact.

Methods: We evaluated historical data on blood loss, operative times, length of stay, post-operative parameters and complications for common urological surgeries and compared to contemporary series. We examined major advancements in techniques, equipment and management.

Results: The main operations of interest identified were cystectomy, nephrectomy and transurethral prostatectomy. Radical nephrectomy has been transformed from a highly morbid, long recovery procedure to a 1-2 day stay due mostly to minimal access surgery. With regards to cystectomy, 1980s hospital stay averages of 20 - 35 days are incomparable to today's average of around 7 - 8 days. Step-by-step improvements within enhanced recovery programs, including reduction in opiates, earlier feeding/ mobilisation in addition to bipolar/ultrasonic dissection devices and smaller incisions, have had considerable impact.

Conclusion: The last 30 years have seen astounding changes in surgical techniques, peri-operative management and changing attitudes to post-operative care allowing for much reduced recovery time and complications. We must be mindful of our developments to inspire subsequent generations to avoid complacency and strive to further our current practice.

P5-8 The progression of medical research in urology

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Introduction & Objectives: Evidence in medicine was largely anecdotal before the mid-19th Century, until doctors such as Pierre Louis (1787-1872) statistically interrogated established practice. It was not until 1946 that the first Randomised Controlled Trial (RCT) was published. We present how approaches to research in urology have evolved over the last 50 years.

Material & Methods: Writing on the advances of research in medicine was evaluated, before looking specifically at urology. Three reviews of 'key papers' in urology (1967, 1999 and 2010) were analysed for changes in approaches to research. We also considered what are currently the most cited papers.

Results: In 1967, experts referenced papers from eight decades; in 1999 there were selections from each of the previous three decades; but in 2010 the vast majority were from the preceding ten years. In the first two reviews most studies were case series, with no RCTs in the first and less than 10% in the second. However, in the 2010 publication, RCT was the most frequently used study technique (38%). In slight contrast, the most commonly cited papers come from a greater period than in the 2010 review, with proportionally less RCTs. This may represent the fact that earlier work reports the initial evidence, which the authors subsequently go on to explore in their own research.

Conclusions: Urology has developed and expanded over the last half century. Research that is now considered the most significant is increasingly contemporary, with RCT (despite flaws) being seen as the most important approach.

P5-9 History of Sri Lankan urology

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Sri Lankan urology has a 60-year history and is moving forward with great scope. Urology was first established in Sri Lanka by Dr GN Perera (1955), a general surgeon appointed as a urologist. He managed patients with limited facilities and faced a fair degree of resistance to

progression by other colleagues. His practice was mainly confined to open procedures, and endoscopies were used for diagnostic purposes. This field was further supported by two general surgeons who carried the baton forward. Interestingly, the first TURP (1968) was performed by a general surgeon appointed as a urologist.

The Postgraduate Institute of Medicine approved a structured, supervised, local and foreign training programme. The first Senior Registrar (1988) selected urology and formed a pathway for de novo urologists.

The Sri Lankan Association of Urological Surgeons (SLAUS) was established (1999) mainly by three eminent urologists. The Sri Lankan Journal of Urology is a peer-reviewed journal, launched in 2010, with a great contribution by the first recognized urologist (Dr SAS Goonewardhana). Joint meetings with other associations and annual conferences have strengthened international exposure. Several publications in local and international journals by enthusiastic urologists has been another advancement. Two major urological centers have shockwave lithotripsy (1992), which has provided a significant contribution in stone management. Minimal invasive urology has expanded over 25 years, predominantly in Colombo which is the Centre of Excellence for video-endourology, advanced open operations and laparoscopic procedures.

Now, all procedures and instruments are available in major hospitals for more than 30 urologists to treat over 20 million people. The introduction of health tourism opened a pathway in the private sector, which has also been a step forward in its development.

P5-10 The rise of French urology: 1870-1919

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The end of the 19th Century was a turning point for French urology. Over a period of 50 years it became a true specialty: new instruments were developed, the first volume of the Encyclopédie Française d'Urologie was published, and the Association Française d'Urologie was founded.

The Fathers of French Urology

F Guyon (1831-1920)

He set out five principles for the development of urology:

- urology is a separate surgical specialty
- multidisciplinary and research were necessary

- understanding physiology and anatomy are its basis
- teaching was essential
- a specialty group was required to promote urology

J. Albarran (1860-1912)

A celebrated student of Guyon

Published extensively, contributing significantly to the urological literature

Developed ureteric catheterisation, the

'Albarran lever' and was the first French

urologist to perform perineal prostatectomy

F Legueu (1863-1939)

Successor to Guyon and Albarran as the Head of Necker Hospital

Considered a brilliant surgeon and a leader of French urology

A driver for reunification of French urology during the First World War

Instrument development

J. Charrière described catheter size: French gauge.

Nelaton's rubber catheter

Benique's urethral dilators

P. Segalas d'Etcheparre developed the speculum urethrocytic, a French cystoscope

L. Mercier developed the Coudé catheter

The French Associations

During this period three important institutions were established:

1896: The Association Française d'Urologie (Guyon)

1907: The Association Internationale d'Urologie (Guyon)

1916: The Société Française d'Urologie (Legueu)

The Encyclopédie Française d'Urologie

First published in 1914 by A Pousson and E

Desnos it is a collection of books dedicated to urology. These detailed texts are still used as reference.