

BJUI BAUS Annual Meeting, 23–26 June 2014

Unmoderated Posters

Tuesday 24th and Wednesday 25th June
Unmoderated Poster Session
13:15–13:45 in Hall 2 (Exhibition)
HISTORY OF UROLOGY
Posters U1–U15

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HISTORY OF UROLOGY

Posters U1–U15

U1

The commercialisation of Urine in Ancient Rome

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We examine the ancient use of urine, focusing on its use in industry and medicine throughout the Roman Empire. Although today, urinalysis (using its 3000 metabolites) detects diseases, infections and drug use, its importance dates back centuries. Uroscopy (urine's colour, taste and smell) was a primary diagnostic method before 1800 and wound cleaning and oral intake for numerous infections was medically recommended.

However, urine was first used commercially in Ancient Rome – from teeth whitening, to skin creams and treatment for sores and stings. Collected from all sections of Roman society (from cesspits & public latrines) and sold to the booming tanning and textile industries, where phosphorous and potassium was extracted to clean and whiten the woollen fabric. Ammonia in stale urine was used for yielding pigments for dyeing wool. Animal skins were soaked in urine to remove the hair fibres before tanning.

Major users of urine were the 'Fulloners' (dry cleaners) who provided frequent serious cleansing to Roman clothing by soaking dirty garments (mainly wool) in a heated mixture of urine and water, separating dirt and, sweat before rinsing.

Their commercial success led to Emperor Nero levying a tax on the urine used. This was later re enacted by his successor Vespasian (69–79 AD).

Vespasian's urine taxes 'vestigial urinae' brought wealth and financial stability to the whole Empire.

U2

Urethral sounds: Otis to Clutton

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Urethral sounds were originally designed to diagnose bladder calculi by creating an audible sound when in contact with a stone. Their use for this purpose has been superseded by modern imaging techniques. Fessenden Nott Otis graduated from New York Medical College in 1852. He designed a number of Urological instruments including the Otis urethrotome, urethrometer and dilating urethrotomes. Otis described the bulbous sound in 1861; he wanted an instrument to identify both the point and the size of urethral strictures. Otis bulbous sounds were made from a slender copper shaft with a simple olive shaped metallic bulb. Otis sounds were adaptations of the ball probe of Bell, combined with the acorn shaped ball of Jean-Jacques-Joseph Leroy d'Etiolles flexible ball probe. The handle is hollow allowing it to be moved forward on the shaft and screwed fast to determine the depth of the stricture.

Henry Clutton trained at St. Thomas's Hospital, London and was an advocate of a pathological rather than an anatomical approach to surgery. He published a few collections of case reports most notably 'Symmetrical Synovitis of the Knee in Hereditary Syphilis' a rare condition referred to as "Clutton's joint". While Clutton was described as a distinguished surgeon and remarkable teacher, it appears that he did not invent any surgical equipment. Why an English surgeon's name came to be associated with an American surgeon's instrument is somewhat obscured by time but it appears that Clutton sounds were designed by Otis and adopted by Clutton.

U3

The introduction of the Cystoscope into the British Isles

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A great challenge in urology was to visualise the urinary tract through the urethra. We describe early pioneers of endoscopy in the British Isles and the evolution to modern cystoscopy. In 1844, John Avery (London) attempted to view the urethra via a Palmer's lamp reflector (used by miners) to redirect candle light onto a speculum's mirror. In 1865, Sir Francis Cruise (Dublin) introduced a version of the Desormeaux

endoscope enabling him to perform endoscopic treatments including urethrotomies. However, light intensity and excess heat were problematic. In 1867, Mr Archer Warwick (London) presented an endoscope using natural north light allowing urethral, but limited bladder vision.

Cystoscopy progressed with the incandescent light bulb by Sir Joseph Swan (Newcastle) and Edison (America). David Newman (Glasgow) used this in 1883, to catheterise female ureters under vision. Sir Henry Thompson introduced the original Nitze-Leiter scope to Britain in 1880. In 1888, he stated in his lecture on cystoscopes that, 'it will not be necessary very frequently to employ the apparatus'. Edwin Hurry Fenwick disagreed, and demonstrated its use in the diagnosis of urethral, bladder and renal diseases and promoting its advantage over sounding, bimanual and open digital examination of the bladder.

Swan/Edison lamps changed the cystoscope from experimental to workable instruments but the invention of the rod lens by English scientist Harold Hopkins in the 1950's made the cystoscope the fundamental instrument of a urologist. From light reflectors to the rod lens, the British Isle urologists contributed to the development of today's cystoscopic technology.

U4

The humble struvite stone: From its discovery to the modern day

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Introduction: Magnesium ammonium phosphate hexahydrate, (NH₄MgPO₄·6H₂O) is also widely known as struvite. Its discovery is credited to Heinrich Christian Gottfried von Struve (1772–1851), a Russian diplomat, employed as the minister for mining in Germany, and an avid naturalist. Known by a plethora of names, struvite calculi commonly occur secondary to chronic urinary tract infections with urea-splitting organisms, such as *Proteus Mirabilis*. Here we look back at the history of the struvite stone; from its discovery to its modern roles.

Methods: A comprehensive search using texts from the Wellcome History of Medicine Library and the internet were undertaken.

Results: Baron Von Struve was born in Hamburg, Germany, and harboured a keen interest in geology and mineralogy. Struvite was first described from crusts recovered in 1845 from a medieval underground sewer, during the construction of the St. Nikolai Church in Hamburg. The name 'Struvite' was coined in Struve's honour in 1845, by Georg Ludwig Ulex, a Swedish geologist to whom Struve was mentor and friend at the time. Before this, the compound was mainly called 'guanite', as it was found in bat guano. However, the association between struvite and ammonia-rich urine was recognised earlier in 1818. Today, it is extracted from human waste and refined to produce high quality fertilisers.

Conclusions: The struvite stone has come a long way from its quiet discovery in a sewer. For our patients, the reason for years of unexplained pain, recurrent infections and invasive surgery, to making a significant positive contribution to the farming industry.

U5

The Disability of King James I

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Introduction: King James VI of Scotland and I of England (1566–1625) was undermined throughout his reign by physical malady. He was described as being incapacitated by attacks of severe loin pain with associated dysuria, 'sandy urine' and haematuria. We examine the possible underlying cause for his symptoms and the effect on his reign.

Methods: A review of the original clinical report by attending clinician, Sir Thomas Mayerne, at the British Library. Web-based literature search on King James I.

Results: James I suffered from a constellation of symptoms throughout his life. As a child, he had delayed motor development, difficulties in walking and was noted to be a 'clumsy horse rider'. He suffered from classical symptoms of renal colic, with debilitating loin pain, which often precluded him from leaving his chambers and attending parliament. In

addition, he had symptoms of arthritis and skin changes consistent with gout. He was prone to bouts of intense melancholy and, in the later year of his life, cognitive impairment. King James died at the age of 59. Post-mortem examination revealed friable urinary calculi in an atrophic kidney and congestive cardiac failure.

Conclusion: There are numerous theories regarding the underlying cause for the maladies of this 'cantankerous King'. However, an abnormality of uric acid metabolism (a mild form of Lesch–Nyhan disease) is most likely to account for his symptoms including his lithiasis. King James I is now regarded as a thoughtful monarch, however his authority during his reign was compromised by his physical and mental ailments.

U6

The Management of Urological Conditions in Anglo Saxon England

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Introduction: There are over 1000 pages of medical texts written in Anglo Saxon still in existence. Although some are copies of Classical Greek texts, others are clearly Anglo Saxon in origin and give us a tantalising glimpse into the work of the Anglo Saxon doctor or Leech.

Method: Original texts including, the Leechbooks of Bald, the Third Leechbook, the Lacnunga and the Herbarium were searched for urological conditions and their treatments. Secondary sources were also consulted.

Results: Urological conditions identified included, bladder pain, bladder stones, urinary retention, urinary incontinence, haematuria and kidney or loin pain. Treatment included the use of herbs such as Meadow Saxifrage for bladder stones or Dog Roses for haematuria. Animal parts were also used for example, the ashes of burnt boar claws for incontinence and roasted rams bladders for retention. Magical charms were also used and included, a spell which gave the healer's hand the power to cure renal pain for a year and a charm against elf arrows which was thought to be the cause of unexplained colicky loin pain.

The Anglo Saxon period spanned both pre-Christian and Christian times and Christian prayers to saints and relics were used as well as pagan charms and spells.

Conclusion: Urological conditions in Anglo Saxon England were managed with a combination of herbology and magic. Contrary to this being a Dark Age in English medicine the Saxon Leeches had access to classical medical literature, translated into the vernacular as well as works describing Saxon medical techniques.

U7

Hugh Hampton Young: One of a Kind

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Introduction: Often called the father of modern urology, Hugh Hampton Young was born in 1870 in Texas. His adult achievements were nearly lost to us all when, aged 4, he nearly drowned whilst playing near the San Antonio River. Rescued by his mother he was lucky to survive. An early interest in engineering gave way to medicine. Before urology, he worked extensively in bacteriology and virology.

Material and Methods: A systematic search of urological literature, historical sources, online and published material was performed on the subject.

Results: The truly amazing thing about him is that his achievements outside the field of urology were as exceptional as those within. The classification of posterior urethral valves, development of cystoscopies leading to the future punch resectoscope, perineal removal of the prostate, and a book 'Young's Practice of Urology' are just a few of his urological achievements.

As chairman of the State Aviation Committee, he led the construction of an airport now known as Baltimore Washington International Airport. As chairman of the Lunacy commission, he helped secure funds for construction of a building for insane patients that was named after him. There is a library named after him at the John Hopkins and an award presented each year in New York for contribution in Urology.

Conclusions: In this day and age of super-specialisation the potential to become the next Young is impossible. How a man with his medical ability can still achieve so much outside medicine really does mean that he is one of a kind.

U8

An History of Penile Prosthesis

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Introduction: Penile prostheses are considered third line management of erectile dysfunction in men who have failed to respond to oral pharmacotherapy or intracavernosal treatment. Currently available devices are either 2- or 3-piece inflatable implants or malleable devices. Contemporary prostheses, which are both safe and efficacious, are a result of continued technological evolution of the first implants introduced in 1936.

Methods: Literature search using Pub Medical of the key words 'history', 'penile implants' and 'penile prostheses'. Nine appropriate articles were reviewed which date from 1979 to 2009 with a further two articles found in citations.

Results: A Russian surgeon, Nikolai Borgoras is considered the pioneer of penile implant surgery having used rib cartilage and bone to restore penile rigidity. Thirty years later surgeons used acrylic and subsequently polyethylene rods. The position of the implant has also varied and placement inside the corporal bodies was found to be the most effective. The fundamental principles of modern day implants arose in designs from two groups in 1973 and 1975 respectively, Scott *et al.* (inflatable device) and Small and Carrion (malleable device). Since the 1970s, the early disadvantages have been overcome with changes to materials, shape and size of the prostheses.

Conclusions: Penile implant surgery has been in existence for around 80 years. In that time penile implants have developed from primitive rod structures to inflatable devices that can be controlled by the patient. The success rate of modern implants is now around 90%. Recognised complications are primarily infection and malfunction.

U9

'One sex, two genders': Evolution of the two-sex theory

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Introduction: Until the 18th century there was one sex. Man and woman shared the same organs. The only difference was that male genitals were external and female ones internal owing to a lack of 'vital heat'. We examine through literature and image, the social and historical development of the 'two-sex theory'.

Patients and Methods: Contemporary sources and manuscripts from the archives of the Wellcome History of Medicine Collection, Royal Society of Medicine, London and the Whipple Library, Cambridge were reviewed.

Results: Before the enlightenment, sex was not binary but a continuum from less perfect-to-perfect, from woman to man. The genders were merely different versions of one sex where 'women menstruated and men had bleeding hemorrhoids.'

"Turn outward the woman's, turn inward . . . and fold double the man's and you will find the same." Antiquity is littered with such assertions. These were used as proof that no anatomical difference between man and woman existed. The vagina was an inverted penis, the uterus, an inverted scrotum.

This view was mirrored in vocabulary, 'testicle' being applied to both male and female anatomy until 1800. However as male and female roles in society differentiated, understanding of anatomy did too, women coming to be seen as 'a series of oppositions and contrasts . . . all parts of her body present the same differences'.

Conclusion: History is littered through image and text, a belief that once women and men represented two forms of the same sex. Development of the two-sex theory represents a fundamental change in understanding of anatomy.

U10

Flowing Through the Ages: A History of Uroflowmetry

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Uroflowmetry dates back to 1897 when Rehfish attempted to gauge flow character by simultaneously measuring urinary flow and intravesical pressure during micturition around a catheter.

Unfortunately, subsequent investigators (Ellis-1902; Ballenger-1932) regressed to quantifying urinary stream by measuring its greatest 'cast' distance.

In 1948, Willard Drake devised the first practical 'Uroflowmeter'. Constructed from an erector set and screen-door spring, the device plotted voided urine weight against time, producing a flow curve from which peak flow rate could be calculated. The flowmeter was then adapted to investigate women by placing it below a funnel under a commode (1954).

Von Garrelts (1956) subsequently constructed a flowmeter that plotted a flow rate derived electronically from the urinary stream pressure and concluded that the 'velocity of voiding' was dependent upon volume voided and that a minimal volume was required to achieve representative peak flow. Kauffman (1957) then developed Drake's and Von Garrelts' designs producing a commercial 'automatic recording uroflowmeter' relying on voided urine weight.

In 1969, Zinner described the urinary stream breaking into drops after urethral exit, and designed the drop spectrometer which measured the velocity of these drops to calculate instantaneous flow rate.

Then in 1970, DISA Elektronik® developed the spinning disk uroflowmeter that is most commonly used today. Operating on the principle that the amount of electrical energy required to maintain a spinning disc at constant speed with urine falling on it is proportional to urinary flow rate, this technique led to reproducible results and uroflowmetry becoming a mainstay investigation in LUTS assessment.

U11

History of Bladder Pain Syndrome (Interstitial Cystitis)

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Introduction: Bladder Pain Syndrome (BPS) is a regularly misdiagnosed disease of unknown aetiology. Throughout history, there have been various theories proposed by different types of doctors regarding BPS. The list below shows the most important contributions to the development of BPS.

Materials and Methods: A review of primary and second sources was conducted, and a chronological list was formed on the history of BPS.

Results: BPS was first described in 1808 by Philip Syng Physick. Portrayed as the father of American Surgery, Physick described BPS as the 'trigeminal neuralgia' (tic douloureux) of the bladder due to ulceration, characterised by severe lower urinary tract symptoms.

In 1870, Obstetrician Sir James Simpson suggested that bladder instillation with silver nitrate under chloroform anaesthesia would treat BPS. In the same year, Lawson Tait pioneered urinary diversion; a procedure where the bladder is connected to the vagina, allowing fluids to pass.

In 1887, Gynaecologist Alexander Skene described these symptoms as interstitial cystitis, a name which is still synonymous with BPS today.

In 1908, Urologist Max Nitze suggested that the aetiology behind the disease could be due to inflammation, referring to this as cystitis parenchymatosa.

In 1915, Guy LeRoy Hunner stated that the reason behind Bladder Pain Syndrome was a rare type of ulcer. This was shown to be correct in 5–10% of BPS.

Conclusion: We believe that the names mentioned above were some of the most important people who contributed to the description and treatment of BPS throughout history.

U12

The discovery and history of Balkan Endemic Nephropathy

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Introduction: Balkan endemic nephropathy (BEN) is a chronic interstitial nephritis of uncertain aetiology seen in the alluvial plains along the tributaries of the Danube River. BEN has strong association with upper urothelial cancers with a risk up to 100 times higher compared to non-endemic regions.

Materials and Methods: A literature search was performed on topics related to early case reports or topics related to the discovery, history and epidemiology of BEN on Pubmed and on archives at the Royal Society of Medicine.

Results: A fatal chronic renal disease was first described in 1956 in Vratza, in north-western Bulgaria. Initial studies showed a remarkable clustering of patients in areas, families and even households. Shortly after, a tragic outbreak in nearby Yugoslavia was described where a mother and her two daughters died of renal disease whereas the father and son suffered severe renal failure. The link with urinary tract tumours was identified in 1960 when Petrinska-Venkovska reported 16 cases of 33 autopsied patients with BEN. It was not until 1967 that the causal link of BEN with the nephrotoxic and mutagenic *Aristolochia clematitis* (birthwort) seeds was proposed. The association became more evident in later years as life expectancy of patients with BEN increased significantly due to the widespread use of dialysis.

Conclusions: The 'mysterious' focal topographical distribution of BEN has not changed for over 50 years. Although there is accumulating evidence for a causal link of aristolochic acid with BEN, the definite cause of the disease remains unclear.

U13

From Lister to Laparoscopy: 100 years of urology in South East London

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Introduction and Objectives: In 1909 Edward the Seventh laid the foundation stone of the hospital and it opened in 1913 in Camberwell in South East London. It had moved from its site in central London as the population around the hospital was declining. The history of 100 years of urology uniquely captures the time and the evolution of the speciality.

Materials and Methods: Primary and secondary sources were studied from documents, archives and interviews relating to the history of the urology department. The results are presented.

Results: Lord Lister was appointed in 1877. It was his understanding and introduction of antiseptic that revolutionised surgical practice. This was continued by Sir William Watson Cheyne. The urology department was established by Sir John Thomson-Walker. John Everidge and Geoffrey Yates-Bell were junior colleagues and later went on to be instrumental in the establishment of the British Urological Association from the Royal Society of Medicine. He was succeeded by Andrew Yates-Bell, who was able to continue the links with the Royal Society of Medicine. The appointment of John Prior led to the establishment of Andrology. Links were established with Professor Giles Brindley from the Department of Neurosciences which resulted in a number of new treatments for erectile dysfunction. In 1994 the late Malcolm Coptcoat performed the first laparoscopic nephrectomy in Europe.

Conclusion: This paper chronicles the history of the department of urology in our institution and highlights the events and the surgeons who have helped develop urology into the speciality that we recognise today.

U14

A History of the Management of Male Urinary Incontinence

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Introduction: Urinary incontinence is rarely addressed in ancient literature. Recent advances in urological surgery have led to an increase in iatrogenic male stress incontinence.

Materials and Methods: A systematic search of the available urological literature was conducted to identify the key historical advances in male urinary incontinence management.

Results: The use of urinals for male incontinence is documented as far back as the 16th century, consisting of pouches constructed from pigs bladders strapped to the body. Early examples of penile clamps for the compression of the male bulbar urethra became available in the 18th Century, enabling men to exert control over voiding their bladders. These early external devices were supplanted by artificial urinary sphincters, introduced by Foley in 1947. These consisted of an external cuff around the penile urethra and a pneumatic piston for manual deflation. This principle is used today, although modern artificial urinary sphincters are smaller and implantable.

Urinary catheters have been used for centuries but were revolutionised by Foley; his dual lumen balloon catheter is used to this day. In the late 19th century, paraurethral paraffin injections were used for urethral compression. This principle is still used today, and there is still no consensus on the optimal agent to inject.

Conclusion: Male incontinence continues to be a problem, often caused by urologists themselves. Many of the principles of management remain the same, but technological advances have considerably improved outcomes.

U15

The role of the Royal Society of Medicine and BAUS in the development of British Urology

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Introduction: This study aims to describe the role of major institutions in establishing British urology as a speciality.

Materials and Methods: Literature was reviewed and key figures interviewed from both the Royal Society of Medicine (RSM) and BAUS.

Result: Having initially struggled due to its association with venereal disease, urology's reputation rose with the establishment of St Peter's hospital in 1860, and the deeds of the charismatic Sir Henry Thompson.

Edwin Fenwick petitioned for an RSM section of urology in 1913. In 1920, in his presidential address, Peter Freyer spoke of hope for the section: 'by creating a healthy and friendly rivalry in your efforts, and by co-coordinating your work, will have a vast and favourable influence in continuing the progress of recent years.'

In 1944 past section president Ogier Ward was consulted by the architects of the proposed National Health Service (NHS) to voice the opinions of urological surgeons. BAUS was founded the following year with Ward as president and all twelve council members as previous RSM section presidents.

Relations between the two bodies remained healthy and the section broadened its appeal with the 1956 president, pathologist Cuthbert Duke celebrating that: 'we can discuss the urological patient objectively, without so much as a passing thought for hospital estimates or priorities or any such thing.'

Conclusion: The professional bodies (RSM and BAUS) were formed to represent the interests of British urologists. The formidable past presidents of each expressed visions that became instrumental to the evolution of urology as a speciality.