While intelligent design may be involved in the development of a new surgical technique, how this concept evolves over time may be quite unpredictable. It is only through the retrospectoscope that one can ascertain the value and importance of the technique. In this edition of DPU, 4 surgical concepts are discussed. Each one of them, at some point in time, was published, attracted attention, may have been the source of controversy or may have been considered to be a major improvement in the urologic care of children. Looking back, however, it becomes clear that some of these concepts may either not have stood the test of time or may have evolved in ways that could not have been anticipated given the degree of enthusiasm generated initially. Tony Caldamone and I thought that it could be interesting to revisit 4 concepts: supravesical diversion, autoaugmentation of the bladder, gastrocystoplasty, and the MAGPI hypospadias repair. At the 2007 SPU meeting in Anaheim, with candor, humor, diligence and honesty, 4 distinguished panelists provided a historical perspective as well as an assessment of each of these topics. I am extremely grateful to them for taking the time to summarize their presentations.

Carlos Estrada offers a history of supravesical diversion, a method of urinary drainage that still sees use, albeit infrequently. He will explain why. Very astutely Carlos went back to the sources and gained insight on the evolution of supravesical diversion from one of the most experienced pediatric urologists, Dr. Alan Retik. His summary of the indications for supravesical diversion illustrates the changes in management of obstructive uropathy in the child.

Rafael Gosalbez discusses gastrocystoplasty through the lens of a seasoned surgeon who, early in his training, was exposed to the technique and wrote up one of the early series. His experience has now been tempered by the realization that a number of patients who underwent gastrocystoplasty have developed a malignancy in the augmented bladder.

Ross Decter shares his personal experience with the MAGPI procedure that John Duckett worked hard to promote in the 1980’s. A few years down the road, and many TIPs later, it appears that the technique, despite important modifications, may not have much of a role in the hypospadiologist’s armamentarium.

Finally Brent Snow updates the current status of autoaugmentation of the bladder. His philosophical musing about innovations in pediatric urology reflect perfectly the intent Tony Caldamone and I had in mind when we put together the concept for Evolutionary Ideas in Pediatric Urology. There are many more ideas worthy of scrutiny and we hope more will come our way in the future.
Supravesical Diversion for Bladder Outlet Obstruction
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In the pediatric population, supravesical urinary diversion for the management of obstructive uropathy has a long and evolutionary history over the last 40 years. Historical aspects of supravesical diversion will be reviewed followed by a summary of current indications for use of the various techniques.

Historical Perspective
Initially the main indication for urinary diversion was urinary stasis and infection in a dilated urinary tract. As early as 1878 Robert Weir suggested that open drainage of the kidney may be useful in such cases. In 1893 Henry Morris reported the first nephrotomy that he performed for the same indication. Supravesical diversion did not begin to truly evolve, however, until the 1960’s when Johnston (1963) described the cutaneous pyelostomy or ureterostomy and Perlmutter and Tank (1968) described the loop cutaneous ureterostomy. A specific indication for the development of these approaches was the primary management of posterior urethral valves while the general indication continued to be urinary tract obstruction, stasis, and associated infection.

These open procedures were the unchallenged state of the art until the endoscopic ablation of posterior urethral valves was first reported in 1966 by Johnston. Controversies quickly arose regarding open versus endoscopic treatment. The debate centered around which modality was best for which patients with bladder outlet obstruction, and which might offer the best chance of promoting normal bladder physiology, adequate drainage of the upper urinary tract and preservation of renal function.

The 1970’s brought technical modifications of the proximal loop ureterostomy. In this decade, the main indication for supravesical diversion by these various procedures was persistent obstruction of the urinary tract following endoscopic valve ablation. In 1972, Sober described the Sober-Y ureterostomy. In 1975, Williams and Cromie described the ring ureterostomy. Other obstructive and static processes such as ectopic ureters, primary megaureters, and prune belly syndrome continued to be considered indications as well for supravesical diversion in selected cases. An important question arose in the late 1970’s: could either supravesical diversion or primary posterior urethral valve ablation yield equivalent outcomes with respect to long-term renal function and somatic growth? In 1978, Hendren presented data suggesting that there was no difference. But, two years later, Krueger and associates proposed that supravesical diversion may have better outcomes.

During the 1980’s, the advent and rapid expansion of the use of percutaneous nephrostomy drainage ushered in a new era. How much this approach supplanted open supravesical urinary diversion remains unclear, but several large series suggest that percutaneous drainage had become the modality of choice for urgent decompression of the upper urinary tract. With regard to open supravesical diversion, there were no data reported in the 1980’s comparing the different surgical options, but there was further long-term efficacy and safety documentation of various procedures. Two series, one from Sarduy et al. (59 cases) and one from Kogan and Gohary (20 cases) reviewed experience with end cutaneous ureterostomy. In these reports, this particular procedure was utilized in a heterogeneous cohort of patients with neurogenic bladder dysfunction, ectopic ureters, bladder extrophy, and posterior urethral valves with relatively good results. In 1985, MacGregor et al. described 45 patients in whom either an end cutaneous ureterostomy and or high loop ureterostomy was carried out. These diversions were employed interchangeably in patients with neurogenic bladder dysfunction, posterior urethral valves, urethral stricture, bladder extrophy and high grade vesicoureteral reflux. These reports did not aim to define which type of procedure is indicated for particular diseases and did not offer clear recommendations for use of either procedures.

The 1990’s brought refinement of the indications for supravesical diversion: Rosen et al. suggested that high loop ureterostomy should be used in obstructed uropathy, high grade reflux into a solitary kidney or obstruction with infection; end cutaneous ureterostomy should be reserved for the older patient with poor bladder function, including patients with prune belly syndrome, posterior urethral valves, bladder extrophy, and a UG sinus. They also suggested that the end cutaneous ureterostomy could serve as a permanent diversion in the most extreme cases. In 1992, Mor et al. described experience with the low loop cutaneous ureterostomy in 50 patients. Any anomaly of the lower urinary tract with marked ureteral dilatation causing infection and/or renal impairment was considered an indication for use of the technique. The authors reported that the procedure was advantageous because it was felt that the distal end of the ureter was available and close to the bladder where the definitive surgery was to be carried out, ureteroneocystostomy usually two years later.

In a 1995 Dialogues in Pediatric Urology, a panel of experts from Children’s Hospital Boston, Johns Hopkins Hospital and Children’s Hospital of Philadelphia debated uses and indications of cutaneous pyelostomy, high loop ureterostomy and end cutaneous ureterostomy at each of these institutions. A summary of the opinions as well as a consensus is provided in Table 1.

Another interesting question arose in the late 1990’s: could supravesical diversion be detrimental to bladder function? In 1997, Duckett suggested that high diversions may result in an iatrogenic “valve bladder.” In the same year, Close and associates suggested that supravesical diversion did not have a significant effect. In 1996, Kim demonstrated that temporary diversion led to a larger capacity, better compliance, and less instability of the bladder using comparative urodynamic data.

The evolution of supravesical urinary diversion and its indications have continued in the 2000’s. In 2000, Liard et al. described a Sober-Duckett ureterostomy for severe posterior urethral valves. Their report focused on the benefits of bladder cycling and, therefore, benefits of the Sober technique since it allowed for urine to come down into the bladder. The authors disagreed with the bladder defunctionalization hypothesis Duckett had proposed. In 2003, Mattioli et al. reported on their experience with high loop ureterostomy for primary, high grade vesicoureteral reflux associated with sepsis. They suggested that this approach resulted in preservation of renal function and reduction of the rate of infection. In a recent report (2007), Kitchens et al. described the end cutaneous ureterostomy for primary and secondary megaureters. They reported a series of 29 patients, of whom 15 had primary megaureters, 10 had secondary ureters and 4 had postopera-

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tive megaureters. Of these, 21 underwent undiversion and ureteral tailoring was required in only 22%. They suggested that the end cutaneous ureterostomy is a safe and effective procedure to temporize massive hydronephrosis while awaiting definitive ureteral reimplantation. They also concluded that this approach may minimize the need for subsequent ureteral tailoring as the minority of their patients ultimately required this because of decompression of the ureters. Their conclusions are consistent with the opinion offered by the Children’s Hospital Boston group in the 1995 Dialogues panel discussion.

Current status of supravesical diversion in the management of obstructive uropathy

The historical indication for supravesical urinary diversion is urinary stasis and infection in a dilated urinary tract. The modern indication generally remains the same, but the specific surgical approach depends on the disease. In addition to open surgical technique that the pediatric urologist may choose is the option of percutaneous drainage in cases requiring emergent management such as severe metabolic disturbances and urosepsis caused by an obstructive process. However, the approach is temporary as percutaneous tubes are difficult to manage for prolonged periods of time in children due to an increased risk of infection and dislodgement. Therefore, if a patient requires prolonged diversion, an open surgical technique should be employed in the vast majority of cases once the diagnosis has been ascertained. The choice of procedure may be based on what is expected to be the ultimate reconstructive procedure. In rare cases of posterior urethral valves with persistent or increasing upper urinary tract dilation, rising serum creatinine and altered metabolic parameters, or obstruction associated infection following endoscopic valve ablation, a high loop ureterostomy or a Sober Y or T ureterostomy would be beneficial. In addition, the Sober type methods allow for continued bladder cycling, which may be beneficial. In cases of megaureters or ectopic ureters where obstruction is associated with impaired renal function, a temporizing measure to observe renal function recovery and/or await definitive surgical management of the lower urinary tract may be indicated. In these cases, an end cutaneous ureterostomy appears reasonable as definitive surgical repair will ultimately proceed at the level of the bladder.

In summary, the use of supravesical urinary diversion remains rare, but the available surgical options should remain in the armamentarium of the modern pediatric urologist for use in select cases.

References

Editor’s Comments
As a resident I can remember going to national meetings and witnessing raging controversies on supravesical diversions for children with posterior urethral valves. Controversies were not unilateral, in that they addressed the effect on long-term renal function, a child’s growth and development, and the potential long-term effect on bladder function. I can recall some of those controversies being taken outside as well, particularly onto the tennis court between John Duckett and Bernie Churchill. In fact, this was all good and healthy discussions because as Carlos so well demonstrates, the pendulum always swings too far, and clearly there are selected indications for supravesical diversions, the art of course is in choosing those cases. AAC

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Children’s Hospital Boston</th>
<th>Johns Hopkins</th>
<th>Children’s Hospital of Philadelphia</th>
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<td>Diversion</td>
<td>Cutaneous Pyelostomy</td>
<td>Not used</td>
<td>Preferred: massive VUR with PUV or infection</td>
<td>No indication</td>
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<tr>
<td>High Loop Ureterostomy</td>
<td>Severe renal impairment with massive hydro-nephrosis; bladder that cannot be reconstructed</td>
<td>No indication</td>
<td>Last ditch effort to save child with severe PUV/RF</td>
<td>Heavily dilated, tortuous ureters with obstruction</td>
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<tr>
<td>End Cutaneous Ureterostomy</td>
<td>Dilated, obstructed ureter when immediate repair not possible (severe megaureters, ectopic ureters)</td>
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<td>Newborn who is sickly with obstruction, solitary kidney with ectopic ureter/ megaureter</td>
<td>Early in life as a means of diverting an obstructing megaureter in recoverable kidney</td>
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Gastrocystoplasty: Twenty Years Later

Rafael Gosalbez, M.D.
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The concept of gastrocystoplasty was first introduced by Sinaiko in 1956 as a means of augmenting the bladder. It was subsequently developed by Leong and Ong in 1972 and 1975 but really came into prominence with Mitchell’s article published in 1987. Further refinements of the technique were then described by Adams, Mitchell and Rink in 1988 using what was referred to as the wedge gastrocystoplasty.

The basic premise of the technique is to use a segment of gastric fundus based on a right gastro-epiploic artery pedicle. This segment has a non-absorptive epithelium and secretes hydrochloric acid. The acid milieu thus generated is felt to provide an unfavorable environment for bacterial growth in the lower urinary tract, decreasing the incidence of infections. In addition, the thick muscular wall of the stomach and the spheric configuration achieved with the wedge gastrocystoplasty may allow more efficient bladder emptying. It also facilitates the reimplantation of both ureters and continent catheterizable tubes. The epithelium secretes less mucous which, in turn, will decrease the rate of calculus formation.

The use of stomach for bladder augmentation was felt to be particularly indicated in patients with some degree of renal insufficiency. The net acid secretion of the stomach directly into the urinary tract was felt to help restore acid base balance in those patients unable to eliminate acid due to impaired renal mechanisms. Patients with short bowel could also benefit from use of stomach for bladder augmentation as well as patients who have had irradiated pelvic tumors. Unlike small and large bowel the stomach is usually out of the field of radiation in such patients. Expanded indications for use of stomach for bladder augmentation have included patients with neurogenic bladder showing poor compliance and decreased capacity. This would eventually represent the largest patient population in whom the procedure has been carried out.

Other patients who have been considered candidates for gastrocystoplasty are those with bladder extrophy and those with small bladders associated with bilateral ectopic ureters.

The procedure was extensively used in the 1980 and 1990’s and, over the years, complications have been noted. These complications are mainly related to metabolic disturbances secondary to hypochloremic metabolic alkalosis sometimes associated with hypergastrinemia as well as the hematuria dysuria syndrome. Metabolic complications are noted in less than 10% of patients but hypochloremic metabolic alkalosis may be life threatening. The symptoms of this condition are dehydration, altered mental status, seizures and cardiac dysrhythmias. Treatment is usually geared toward aggressive rehydration, sodium and chloride replacement, in the form of sodium chloride and arginine chloride, and the use of H-2 blockers and proton pump inhibitors in order to limit the hydrochloric acid loss. In the more extreme cases the gastric patch may have to be either removed or reduced with the addition of a segment of intestine.

The hematuria dysuria syndrome is reported anywhere from 6-75% of patients. The symptoms are those of pelvic and suprapubic or penile pain. Coffee ground gross hematuria has been reported with skin excoriation dysuria without infections. The risk factors for the hematuria dysuria syndrome are normal pelvic sensation, spontaneous voiding, renal insufficiency with either oliguria or anuria and urinary incontinence. Immunosuppression may also exacerbate this situation. The treatment for this condition includes reducing the amount of acid production with H-2 blockers and proton pump inhibitors and buffering the acid milieu with intravesical irrigations with alkaline solutions.

Long term follow-up of patients having undergone gastrocystoplasty has been reported by DeFoor et al. in 2003 from Cincinatti with 44 patients having follow-up up to 9.8 years. Despite all of the above mentioned concerns, their outlook remained positive regarding use of the technique. The authors concluded therefore that their practice remains to offer gastrocystoplasty to select patients. Plaire et al. in 2000 reported results in 78 patients with a follow-up of 8.75 years and their conclusion as well was that gastrocystoplasty remains a viable option. Kurzrock et al. from San Francisco in 1998 reported results of 47 patients with 4.4 years mean follow-up and stated that gastrocystoplasty was still commonly used in their practice.

At a plenary session in San Antonio in May 2005, the long term consequences of enterocystoplasty in children were reviewed by Rink. Bladder tumors were reported to occur in a significant number of patients having undergone bladder augmentation. The mean latency period between augmentation and the occurrence of a tumor was calculated to be 17 years from a series of 483 bladder augmentations and 260 having over 10 year follow-up. Three invasive transitional cell carcinomas of the bladder were noted all of whom, ultimately, had a bad outcome. The risk for tumor development after 10 years from bladder augmentation using bowel was felt to be 1.2% and 3.8% after 20 years.

Concerns that gastrocystoplasty may have a greater potential for malignant degeneration were brought up when a number of patients, both from the University of Miami and Seattle Children’s Hospital, developed tumors. In the group from the University of Miami, 29 patients underwent the gastrocystoplasty and 24 out of 29 were followed over 10 years. Three of these patients developed tumors with a latency period of 10 to 14 years on average over 11.7 years. Other reports have been recently published. Most tumors are adenocarcinomas and occur at the gastrovesical junction. No clear risk factors have been identified.

In light of the current experience, a definitive increase in the risk for tumor development seems to exist in patients who have undergone gastrocystoplasty with an incidence possible as high as 12.5% 10 years following gastrocystoplasty. The latency period has been so far calculated to be 10 to 14 years with an average of 11.7 years. The mechanism by which the tumor develops is also unknown but may be related to chronic inflammation, metaplasia, dysplasia and papillary lesions which may degenerate to carcinoma in situ. These types of histologic lesions have been noted in virtually all patients. Presenting symptoms include gross painless hematuria and new onset of hydronephrosis. Immunosuppressed patients such as those with renal transplants present with metabolic disease.

In summary, we recommend that patients who have had a gastrocystoplasty undergo surveillance with renal and bladder sonography yearly. Patients should be monitored for evidence of hydronephrosis. Bladder ultrasound on a regular basis (every six month) should also be carried out looking for diffuse thickening of the bladder wall as well as for bladder masses. Guidelines for follow-up after 10 years following gastrocystoplasty have not been established but consideration should be given to perform cystoscopy with biopsy every year along with urine cytology. Immediate evaluation with cystoscopy should be carried out after each episode of gross hematuria. Immunosuppressed patients also should be monitored even more closely. Prior to undergoing gastrocystoplasty patients and their parents should be made aware of the marked for malignant degeneration.

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Based on the information currently available, we feel a moratorium on gastrocystoplasties seems prudent. Until the mechanism of tumor development in these patients is characterized, the risk factors determined and a method for early detection developed, safer alternatives to gastrocystoplasty for the treatment of urinary incontinence secondary to reduced bladder capacity and poor compliance must be considered. Clearly those patients who have undergone gastrocystoplasty must be monitored very carefully and our adult colleagues who may be following these patients should be made aware of the potential problems related to gastrocystoplasty.

References:

The MAGPI Hypospadias Repair

As guest editor for the October 1981 edition of the Urologic Clinics of North America devoted to hypospadias, John Duckett introduced the concept of the MAGPI (Meatal Advancement and Glanuloplasty) hypospadias repair to the urologic community.1 He noted that because of the perceived complexity of the surgery and potential associated morbidity, patients with subcoronal hypospadias without sexual or micturitional handicap had been denied reconstructive surgery. The MAGPI, he felt, was designed to allow patients with mild forms of hypospadias to undergo surgery for aesthetic reasons and be virtually assured of a satisfactory result.

Figure 1. In the MAGPI the dorsal wall of the meatus is advanced by closing a longitudinally oriented incision through the dorsal urethral margin and shelf of tissue distal to it in a transverse fashion.

Ross Decter, M.D.
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In his article, Duckett described the technical points of the MAGPI repair. The diagrams show the meatoplasty with dorsal urethral wall advancement (Figure 1). The glanuloplasty is performed by retracting the ventral meatal edge towards the tip of the glans and approximating the rearranged tissue subjacent to the meatus to create the effect of a glanular meatus (Figure 2). He reported on over 200 cases with a relatively short follow-up, the only complication being a single fistula.

He observed that it had been a difficult operation to teach others and that, at the Children’s Hospital of Philadelphia, they had not been very successful in producing diagrams conveying the fine details of the technique. Despite the fact the procedure is well described, when one looks over the diagrams and reads the text it is hard to visualize how a normal glans configuration could be achieved. These same diagrams appeared unrevised in the 1986 edition of Campbell’s Urology.2

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John Duckett summarized by stating that the MAGPI would produce the aesthetic appearance of a normal penis but suggested that surgeons who wish to perform the procedure ought to observe a surgeon who had mastered the technique before attempting it. He was, at that time, a major force in American Pediatric Urology. He had a knack for self promotion, as big as all Texas, and a nature that made public disagreement with his ideas difficult.

I was a resident at the time this issue of the Clinics appeared and when I saw a patient with a subcoronal hypospadias in the clinic I suggested to my chief that we should try Dr. Duckett’s operation. He carefully scrutinized these pictures and said to me “I don’t see how this will work”. I thought to myself … well, John Duckett, a renowned hypospadologist, can make it work so there must be something that we are not seeing here that he can do.

When I finished my fellowship and went into practice in 1987, several children who had undergone a MAGPI repair were referred to me. At that time, these repairs were frequently performed in our part of the state by community adult urologists. The most common complaint I heard from the mothers of the patients I saw, was that “the pee hole seems to be where it started”. I also saw a variety of odd glans configurations after an apparent MAGPI. These included glans separation and varying degrees of meatal retraction at times associated with fistula formation. In addition, of course, any number of poorly performed circumcisions were also seen.

By the late 80’s, a few papers started to appear in the British literature describing problems with the MAGPI. The most frequently mentioned delayed complication seemed to be meatal retraction or retrusion. I thought then that Duckett’s concept of achieving a glanular meatal position from a subcoronal meatus without having to perform a urethroplasty provided a clear advantage for the patient. So, I designed an operation that I thought would address the issues that seemed problematic with the MAGPI (Figure 3). The main points of technique I incorporated were an M-shaped glanular incision with de-epithelialization of the skin within the confines of M. The M was then reconfigured into an inverted V. To prevent subsequent meatal retrusion, a suture was placed to fix the ventral parameatal skin at the level of the ventral meatal edge and, most importantly, I used deep glanular sutures to provide solid glans to glans approximation ventral to the meatus.

I first presented my glansplasty at one of the early meetings of the Society of Young Pediatric Urologists and then had an opportunity to present the operation in poster form at the 1990 AAP meeting in Boston. In those days the poster sessions were quite informal. The moderators would lead the group around to look at each of the posters, ask the presenters some questions and ask for comments from the crowd. As we approached my poster, Dr. Duckett suggested loudly that the poster was not worthy of discussion and that people simply move on to the next one because for people who knew how to do a MAGPI, the poster was largely superfluous. Fortunately, Rick Rink, one of the discussants, was able to avert total disregard of the paper by asking a few questions before the crowd was herded on to the next poster. Later that day, I saw Howard Snyder carefully looking over the diagrams on the poster and he mentioned he thought I had a good idea.

Remarkably, the following week I received a telephone call from Dr. Duckett. He opened by apologizing for “behaving at the meeting like such an…” well, let me just say he didn’t compliment himself…and he went on to request that I send him the diagrams of my operation. To give you an idea of my naivety, I was quite flattered by his compliment and I promptly sent him the diagrams.

In 1991, the description of my technique the MIV glansplasty was published in *The Journal of Urology*. In retrospect, it is unfortunate that John did not more clearly and promptly communicate to the pediatric urologic community the changes that the MAGPI repair had undergone. We all recognize that some ideas may seem brilliant initially but ultimately do not always pan out perfectly. They may require modification and tweaking to further improve the desired outcome. They evolve. Although John and his group were responding to deficiencies they recognized in the original MAGPI design, these changes really were not subsequently well communicated to the pediatric urologic community at large and thus the procedure lost a degree of acceptance.

John Duckett and Howard Snyder published an article in 1991 entitled “The MAGPI hypospadias repair in 1,111 patients”. Sadly this was published in the *Annals of Surgery*, a journal which doesn’t get much in the way of general urologic readership. Upon close read, it was clear that the MAGPI repair had evolved from the original description in 1981. In the abstract the authors noted that “the glans wrap to support the advanced ventral urethral wall requires a solid tissue approximation in two layers to prevent a retrusive meatus”. The operative diagrams nicely illustrate the changes in technique, the main modification being a clear illustration of how to achieve solid glans to glans approximation ventral to the meatus in order to try to prevent retrusion. Cited complications in the paper included: fistula, meatal regression and persistent chordee, but only 1.2% of patients required a second surgery. The average postoperative follow-up their 1,111 patients was 2.3 months, quite short indeed. The authors felt that the follow-up seemed adequate to assess the outcome of healing of this type of hypospadias repair. I suspect that most of us would agree that a longer follow-up would give a more accurate representation of the final meatal position.

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In spite of these shortcomings, there can be little doubt that John Duckett’s MAGPI was a major contribution to hypospadiology. John was of the opinion that boys with distal hypospadias should be able to have a normal appearing glanular meatus. Even if we accept that the original MAGPI had some limitations, the concept was evolutionary. The MAGPI ushered in an era when surgeons interested in hypospadias continued to push the envelope to try to achieve normalcy for boys with distal hypospadias.

References

Autoaugmentation

Pat Cartwright and I first published on autoaugmentation in 1989, wherein a bladder diverticulum was created to enhance bladder capacity and minimize bladder pressure in patients with low vesical compliance and high pressures. We showed that nearly half the patients had excellent results and approximately 25% had a fair result. Fair result insofar as they continued to require anticholinergics or did not achieve adequate bladder capacity. The other quarter of the patients failed.1,2

As we ponder what we have learned from this experience, we have certainly become familiar with the cycle of invention: first, skepticism: colleagues suggest it will never work; second, within days there are suggestions from colleagues for modifications the “inventor” should make; third, eventually there are claims by others that they invented it first; fourth, the inventor is called for advice and encouragement from colleagues; and fifth, larger series will be eventually published by others.

We also learned to watch our publications more carefully. Our initial animal publication came out after our initial clinical publication did, although that was not the order they were submitted. We were not watching the galley proofs closely.

It is our belief that it is the responsibility of the inventors to explore the extent to which the procedure applies. We applied it in all varieties of patients who would otherwise undergo augmentation rather than limiting the procedure to a well selected population of patients. It is our belief that it is easier for the inventors to do this since they know the nuances of the procedure better than a follower who has less experience. Although reporting outcomes on a broad variety of patients may decrease success rates, it provides valuable insight into proper patient selection.

Editor’s Comments
As Ross Decter indicated, indeed the MAGPI was an evolutionary concept in pediatric urology. Its beauty was that it was a fairly simplistic operation for distal hypospadias repair. It had most commonly been done without the use of a postoperative catheter. John always described it as somewhat of an illusion, in that a Heineke-Mikulicz would be done to advance the urethral plate distally a bit while another Heineke-Mikulicz done in the opposite direction would advance the glans over the glanular urethra. It was indeed a brilliant concept. The failure of the MAGPI, however, was in its application. It truly only worked well for a proximal glandular hypospadias where there might be a hint of some glans tissue just proximal to the meatus. However when the meatus extended to the corona, trying to apply a MAGPI procedure resulted in less than optimal cosmetic result, as Ross stated. Ross’s MIV repair continues to work very well in selected cases. All of this indicates, of course, that the art of hypospadias is not always in the performance of the technique, but the selection of the appropriate technique for the given anatomy.

Brent W. Snow, M.D., Professor of Surgery and Pediatrics
Primary Children’s Medical Center, University of Utah, Salt Lake City, Utah

It is our belief that it is the inventor’s responsibility to make modifications and promptly report them to help others who may follow. Too often, inventors devise new methods and move on to improvements and modifications which go unreported leaving others no way to learn of the improvements except by word of mouth.

There were several interesting physiologic things we learned about bladders after autoaugmentation. A third of our patients had poor compliance after most of the bladder diverticulum had been removed. It is no wonder that anticholinergics do not work well all of the time. It could be that this continued poor compliance in our patients was from abnormal scarring; however, when we went back to perform a traditional enterocystoplasty on these patients abnormal scarring was not often found. We learned that when a large bladder diverticulum is created, the leak point pressure diminishes in many patients. We would not have expected a dome procedure intended only to decrease detrusor contractions and pressure to affect the sphincter in that fashion.

It has been a surprise to us that there has not been laboratory study about the compliance of the lamina propria and bladder epithelium since a third of patients do not achieve the expected compliance benefit. We have also been surprised that in adult urology the autoaugmentation is not used to diminish bladder overactivity that is medication resistant. However, we have noted that 84% of our patients either have absent or diminished hyperactivity after their autoaugmentation.

Ironically at the University of Utah, we have no gastric augment with hematuria/dysuria syndrome since our work with autoaugmentation was done at the same time gastric augment were being developed in the same patient population.

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Autoaugmentation
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Our experience leads us to strongly advocate a balanced presentation of data. We found colleagues were very bright and made wise choices for their patients.

When presentations take on an evangelical tone, scientific listeners are often put off even when the data is quite good. May I make some philosophical comments about inventing a new procedure? It is truly one of the most exciting parts of academic medicine. Colleagues are genuinely interested in your work even if they are not early adopters or followers, and they follow the development of your work very carefully.

What advice would we give to others? 1. We would do this again as soon as another promising idea is conceived. 2. We would recommend that you do the same. Progress is made by many of us trying new things. Your efforts might stimulate someone else to develop the next best thing.

Alexander Von Humbolt who lived 1769-1859, an explorer naturalist who said:

“There are three stages of scientific discovery.
First people deny that it is true.
Second they deny that it’s important.
Third they credit the wrong person.”

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Dialogues in Pediatric Urology
An official publication of the Society for Pediatric Urology
900 Cummings Center Suite 221-U
Beverly, MA 01915

Guest Editor’s Comments
Initially proposed by Couvelaire in 1957, the concept of allowing the bladder to expand by either incision or excising part of the detrusor muscle, received renewed interest after Pat Cartwright and Brent Snow’s initial reports in 1989. Almost twenty years later, Dr. Snow’s perspective on how evolutionary ideas come about and then take on a life of their own is most interesting. The technique itself has evolved: several surgeons have described technical modifications such as adding muscle backing to the augmentation.1 Few long-term studies have been published and results are mixed. From Poland comes a report, of the 17 patients treated, 13 saw a modest increase in bladder capacity (60cc) and a decrease in intravesical pressures.2 Lindley et al. showed that in over 50% of the pediatric patients who had undergone autoaugmentation, the procedure failed to improve bladder compliance and capacity.3 More recently, Lottman and colleagues showed encouraging results using refinements in the technique such as keeping an inflated balloon in the bladder and tacking the bladder down in order to optimize bladder distention.4

Clearly adequate patient selection is essential in assuring adequate results. Refinements in the technique may add this procedure to the armamentarium of neurogenic bladder management but, at present, it seems reserved to very small number of patients. MC

References

Autoaugmentation
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What advice would we give to others? 1. We would do this again as soon as another promising idea is conceived. 2. We would recommend that you do the same. Progress is made by many of us trying new things. Your efforts might stimulate someone else to develop the next best thing.

Alexander Von Humbolt who lived 1769-1859, an explorer naturalist who said:

“There are three stages of scientific discovery.
First people deny that it’s true.
Second they deny that it’s important.
Third they credit the wrong person.”

References