Few procedures in the endoscopic domain engender as much passion as retrograde cholangiography and pancreatography. At every stage in the evolution of this technique there has been much debate as to the role it plays in diagnosis and therapy, always underscored by the risk-benefit analysis when we factor in the complication profile. My career has paralleled the lifespan of this technique and I have grown and matured much as ERCP has done over the past four decades.

The first challenge of ERCP was that of learning how to operate a side viewing endoscope. In this early phase of endoscopy, the introduction and passage of a scope with no forward view down the esophagus was performed in a quasi blind fashion; much like driving a car down the highway while looking at the soft shoulder on the side of the road. Metaphors such as the “setting sun” were used to describe the passage of the duodenoscope through the pyloric channel. Shortening and straightening maneuvers while rotating clockwise were additional non intuitive steps that were better learned from an expert and not easily picked up experientially. Even with guidance, perforation in the ary-epiglottic sinuses and within a hiatus hernia sack were not uncommon in the early era of this new navigation system. Getting there and finding the papilla of Vater was half the battle and the other half was actually cannulating the sphincter of Oddi. These were the 1970s when CT and MR imaging were not available for diagnosis and endoscopic cholangiography and pancreatography were truly the gold standard to define the anatomy and any associated pathology. Much effort was devoted in that decade to the development of accessories that facilitated cannulation of the desired duct. From a standard cannula we derived iterations with tapered tips, ball tips, dual lumens and even a directable tip operated by a joy stick with wires embedded in the four sectors of the cannula to be able to direct the tip precisely in the direction of the takeoff of the desired duct. The 90 degree take off of the pancreatic duct made it easiest to access whereas the more acute angle of the bile duct required more finesse to achieve selective cannulation. Unfortunately, the bile duct was far more often the site of the problem than the pancreatic duct.

The elation of the initial excitement of crossing the Oddian sphincter was soon sobered by the somewhat unpredictable and devastating impact of iatrogenic pancreatitis. Much like the hurricanes of old which wreaked havoc with no warning, we were blindsided by the post-ERCP pancreatitis. A lot of water has flowed under the bridge metaphorically since the inception of ERCP and in the same way that we can now predict the course and impact of hurricanes such as Irene, we are also able to identify the key factors which lead to pancreatitis and the clinical parameters which help to predict the sequelae thereof. Repeated attempts, overfilling of the pancreatic duct, sphincter of Oddi dysfunction, especially with the younger patient, or one with a known history of pancreatitis became the characteristic profile of the patient at risk for post-ERCP pancreatitis. Eventually, although a few pharmacologic interventions were proven to mollify the course of the pancreatitis, pancreatic duct stents became a standard of care in selective cases. Even more important than any single specific prophylactic intervention, the widespread recognition of the problem and the more respectful and gentler approach to cannulation has reduced the rates of complications. Part of that gentler approach has been the use of soft hydrophilic tipped guidewires to enter the selective ducts rather than injection of contrast agents.

As with many of my colleagues I am particularly grateful for the metamorphosis of ERCP to a principally therapeutic procedure, as the diagnostic component has largely been taken over by non-invasive cross sectional imaging and to a lesser extent endoscopic ultrasound. MRCP has been shown to be almost as accurate in diagnosing obstructive problems and outlining the ductal anatomy as ERCP with the exception of very small ducts as are found in primary sclerosing cholangitis.

The first intervention was sphincterotomy and removal of common bile duct stones. Few techniques are as satisfying as curing cholangitis with endoscopic drainage and this seminal innovation was largely responsible for changing the mentality and character of the GI identity. We were no longer the quintessential diagnosticians but minimally invasive interventionists, a path that is now leading to a convergence of the medical and surgical identities, albeit in its infancy.

The management of common bile duct stone disease is coming very close to maturity as the tools and skills required for difficult stones are becoming more widely disseminated and user friendly. Lithotripsy is the cornerstone of therapy for large stones with both electrohydraulic and holmium laser devices being more widely available in tandem with so called “baby-scope” systems. Nothing is more apt than “what goes around comes around” to describe the evolution of cholangioscopic devices. Twenty years ago the visicath was a catheter with built in eyes by way of a fiber optic cable embedded in the
wall of the catheter. This has now morphed into a SpyGlass® system with the light bundle and the catheter now separated along with the addition of irrigating channels. The dissemination of this technology has brought lithotripsy capabilities to many more tertiary centers.

While mechanical and shock wave lithotripsy for choledocholithiasis has seen much progress, there seems to be a stall with respect to implementation of readily available technologies for pancreatic stones. Calcium carbonate stones often impact and obstruct the main pancreatic duct in some chronic pancreatitis patients and although in a few specialized centers these are being managed effectively with extracorporeal lithotripsy, many such patients are simply ignored. The regulatory and fiscal burden of setting up this treatment and the uncommon occurrence of the clinical problem have let this treatment fall by the wayside in many jurisdictions. We would like to see this very safe and efficacious therapy gain more momentum so that more patients can achieve relief from their chronic pain syndrome.

After stone management, the next most common indication for intervention is that of stenting of obstructive lesions which was first described by one of the founding fathers of interventional endoscopy Nib Soehendra some 30 years ago. Basic plumbing principles employing similar plastic tubes as our urological colleagues was the mainstay of endoscopic drainage until the self-expanding metal stent was introduced. The perfect metal stent is the holy grail for palliation of malignant bile duct obstruction. The features of strong radial force, malleable shape, impermeability, non-shortening, radio opacity, ease of introduction, and longstanding patency are constantly being strived for but as of yet, have not been fully achieved.

Beyond the simple function of the stent as a scaffold, the concept of the stent as a conduit for therapeutic intervention seems like an obvious next step. The stent could serve as a vehicle for radiation brachytherapy or modulated release of chemotherapeutic agents to prevent tumor progression or ingrowth. Scattered efforts have been reported over the years but the chemo-brachy-stent has yet to be developed commercially in spite of the clear potential for this iteration. I look forward to more efforts to develop stents along this line.

The standards of therapeutic endoscopy have been developed for standard anatomy and until 5 years ago the chance of traversing the altered anatomy of a post bariatric surgery patient was 50/50 at best. The availability of enteroscopic techniques to telescope small bowel on to specialized overtubes has changed the entire landscape in this patient population. The 2 meter scope is back in fashion when partnered with a specialized balloon tipped overtube or a spiral screw to plicate the bowel on to the overtube. This “Everest” of endoscopic challenges has now been largely conquered with these devices. In the majority of cases we can advance long distances to reach the papilla or hepatico jejunal anastomosis after major reconstructive surgery.

We are still in our infancy with cholangioscopy and pancreateoscopy. The giants of consumer photography, Nikon and Canon, annually condense more and more pixels into smaller and smaller chips with better focusing and lighting to create magical moments. Not so with our prototype babyscopes which seem to be the laggards when it comes to clear vision.

I am confident that when one of our pillars of endoscopic technology wants to adapt some of the commercial advances into these scopes, we will soon have a new algorithm for diagnosing and staging a plethora of ductal pathology from sclerosing cholangitis to cholangiocarcinoma to intra epithelial neoplasia to diffuse papillomatosis and so on. This advance should be just around the corner.

Once we can see the disease we can understand more fully what is required for successful therapy and monitor our efforts using reliable visual metrics. Topical therapy seems like such a logical step in the treatment of a surface lesion which progresses slowly with local spread. This can apply to sclerosing cholangitis as well as cholangiocarcinoma, and if we look at the ductal epithelium in the way we look at our skin, the world of dermaceutics can be transformed into a world of cholangioceutics.

The wonder of science is that the more we discover, the more we have to discover. As we reflect on our aspirations and inspirations the joy of discovery never disappoints and I for one am happy to say the same of my career.