

REFLECTIVE PIECE

FROM SCALPEL TO DIET – AN EPIC JOURNEY FOR A SURGEON

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You may wonder why a urological surgeon chooses to publish in the ACNEM journal. What has a surgeon to do with nutritional and environmental medicine? And above all, a urological surgeon? A Gastroenterological surgeon... ok. A Hepatobiliary surgeon ...accepted. There is some overlap after all. But a urologist?

Well, let's start very early, when I was a young resident in Switzerland in the early 90ies, learning the trade of urology and my professor at the time told me to join the "stone group". I had no idea what was coming, I only knew there are so many ways to skin a cat, and so many ways to crack a stone.

How surprised I was when I first sat in to that group of urologists, nephrologists and researchers at my university and, although I was fluent in "medical" language, all they were saying sounded like Chinese to me. It was all about physiology, biochemistry and molecular research which I had thought I had left behind after my medical studies. They were not concerned about cracking the stone, but preventing stone disease and recurrences.

It was then that I realized that there is more to it than just cutting the stone (from which Hippocrates refrained for good reasons). My interest was kindled, albeit in the rather limited field of stone disease for the next 20 years.

In a nutshell, urinary stone disease is basically a supersaturated renal disbalance of excreted salts in the urine. Precipitation leads to crystal formation, followed by crystal aggregation and crystal adherence to renal tubular cells. Certain minerals (i.e. citrate, magnesium, oxalate and others) and proteins (i.e. Tamm Horsfall protein, osteopontin and others) act as either inhibitors or promoters of stone disease. And all depends on the right conditions for the crystals to grow, such as urinary pH, urinary tubular flow rate, tubular cell injuries through inflammatory processes, and underlying metabolic disturbance in the body amongst many other factors.

However, in the 90ies dietary studies were very limited in methodology. Most stone research was done in vitro. And it goes without saying that what happens in the test tube stays (mostly) in the test tube. There is no surprise then that stone research did not have any real breakthroughs during the last three decades.

Partially, that is also due to a lack of funding. Urinary stones are a

nuisance, but not a political concern like HIV/ AIDS or cancer.

In 1994, I joined the Flinders University in Adelaide on a Swiss stipend for a three-year research fellowship in stone research. During that time, I researched and published about urinary proteins derived from the coagulation cascade and their role in the organic matrix of urinary stones (the glue that keeps the crystals together).

I then continued that work first at the Erasmus University in Rotterdam/ Netherlands, and also looked into Indinavir stones (an anti-HIV drug) and encrustation of urinary stents which is another form of stone formation based on biofilm formation on a foreign body in the urinary tract.

I then moved to the UK, where I was clinical director of stone disease at the Royal London Hospital, and honorary senior lecturer at the Queen Mary University London which allowed me to do some bench research work.

In 2009, I was elected into the board of the Urolithiasis section of the European association of Urology (EULIS). This is a group of urologist, nephrologists, dieticians and researchers interested in the metabolism and mechanisms of stone formation. Amongst other things, this group was responsible for the European guidelines for the treatment of stone disease, surgical and non-surgical.

It was during these last 10 years, that there appeared some solid evidence about a relationship between stones and metabolic syndrome. This interested me quite a bit, and I started collecting the evidence and lecturing and publishing about it.^[1]

I also recognized and started advocating a multidisciplinary approach to stone disease, as it is the case in many other conditions but rarely in stone disease so far.^[2,3]

Naturally, with all this I had to realize that what happens in the kidney and then ultimately in the urine had to come from somewhere, from our inner and outer environment, endogenously or exogenously.

So far so good. Still, it was all about stones. But as you all know, behind every strong man stands an even stronger woman. My wife Dr. Saima Salahuddin, whilst working as a GP in Australia, developed a strong interest in nutritional medicine. She attended all relevant courses and obtained the certificates.

At first, as you could expect from a Western medical school trained surgeon, I was skeptical. Although, based on my above described experiences I did not reject the notions of nutritional medicine. Admittedly, first I was quite annoyed not only that our shopping trips now were over-proportionally extended since we had to scan all foods for ingredients, but also that our shopping trips led more and more to organic food shops and markets which directly translates into expenses. Not to mention that I was given first one, then two, and then several supplements at the home front. Needless to say, Dr.Saima can be very convincing...

After having met my wife's mentor, Dr. Braham Rabinov, I was even more inspired and started seriously looking into urology and nutrition.

Some years ago, I created my own urological society Urology in Emerging Countries (U-merge). We are a group of academically minded urologists from over 60 countries.^[4] When I launched a call for participation on some projects in urology and nutrition, the response was overwhelming and we formed research groups in some major fields of urology:

- Nutrition & stones
- Nutrition & prostate cancer
- Nutrition & benign prostate hyperplasia
- Nutrition & male fertility
- BMI and stone composition
- Nutrition & overactive bladder
- Nutrition & urinary tract infections

I was therefore very proud to be suggested as a keynote speaker at the 2019 ACNEM conference. Whilst I am aware that – as a urologist – I will be the odd one standing out, I believe that I can contribute from the view of a 'nutritional fringe specialty'. And I seriously hope that this new direction of my work will help raising awareness of the fact that there is more to urology than just a scalpel.

Further reading:

1. Durner L, Bourdouis A, BUCHHOLZ N: Metabolic Syndrome and Urolithiasis (*La lithiase renal dans le syndrome metabolic*). (Invited review for a special issue of *Comptes Rendus de l'Academie des Sciences (chimie) in honour of Michel Daudon*) *Comptes Rendus Chimie*: 1-5, 2016 <http://dx.doi.org/10.1016/j.crci.2015.04.002>
2. Gambaro G, Croppa E, Coe F, Lingeman J, Moe O, Worcester E, BUCHHOLZ N, Bushinsky D, Curhan GC, Ferraro PM, Fuster D, Goldfarb DS, Heilberg IP, Hess B, Lieske J, Marangella M, Milliner D, Preminger GM, Reis Santos JM, Sakhae K, Sarica K, Siener R, Strazullo P, Williams JC, *The Consensus Conference Group: Metabolic diagnosis and medical prevention of calcium nephrolithiasis and its systemic manifestations. A consensus statement. J Nephrol* 29 (6): 715-734, 2016
3. <https://www.youtube.com/watch?v=cTldLOURb6g>
4. www.u-merge.com
5. https://www.youtube.com/channel/UCSCq5K8PNQKXCDgOERmLHg/featured?disable_polymer=1