Antifragile orthopaedic surgeons: a reflection on the training experience

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I’m a newly qualified orthopaedic surgeon. It was the hardest thing
I have ever done.

This essay is a reflection on the things I learnt doing it.

I could say that I ‘burnt out’ during my surgical training. But that
expression has been used to describe such a range of symptoms, from
someone merely feeling depressed, to being the cause of a
colleague’s suicide, that it has lost most of its meaning.

In May 2019 the World Health Organization (WHO) clarified
the term, and it has its own ICD-11 code now: ‘QD85’. It’s not a
disorder as such, but one of the ‘factors influencing health status
or contact with health services’, specifically related to one’s work
environment.¹

And besides, I honestly don’t feel that the term accurately
describes what happened to me.

Shortly before the CMSA intermediate examinations, I was not
doing very well. After working in the orthopaedic trauma firms,
being on call more than once a week, regularly working more than
90 hours per week, and burning the midnight oil on the days that
I was at home, I moved over to the surgical ICU for a few months.
Which I found to be a very stressful environment. My attention span
was shrinking, my ability to concentrate was getting less by the day
and it was making me more and more anxious. And depressed.

Besides, I hadn’t seen periosteum for weeks.

I had started reading a book a year before, called Antifragile by Nassim Nicholas Taleb² who is something of a
modern-day philosopher, mostly doing research on probability and
randomness. As orthopaedic surgeons we are well aware of Wolff’s law³⁴ that describes how function dictates the structure of bone,
and Taleb had noticed that this principle – that some systems gain
from disorder and stress – is found all around us, but no one has
come up with a word for it. There is fragile, to describe something
that doesn’t like changes in the environment (like a wineglass at
an orthopaedic congress) and robust, that describes something
that doesn’t care for changes in the environment (like a wineglass
at an orthopaedic congress) and robust, that describes something
that doesn’t care for changes in the environment (like a 30-year-old
Bristow elevator in the ‘major-ortho’ tray), but nothing that describes
something that actually gets better in the face of repetitive stress,
like bone. The actual opposite of fragile. Thus, he came up with the
word ‘antifragile’. I told myself that I was antifragile. Just absorb the
stress, and you’ll come out stronger on the other side. It had been
my mantra all through my surgical training: operate as much as you
can, study as much as you can, it’s temporary. But I was failing. Why
was I failing?

The ‘impostor phenomenon’, or now more commonly known as ‘impostor syndrome’, is a term coined in 1978 by Dr Pauline
Clance.⁵ It describes a frame of mind in which one constantly
doubts their accomplishments and competencies, despite ample
evidence that they are qualified, and have a fear that they are
eventually going to be caught out as a fraud. Health professionals
are especially affected. We have an ingrained ‘duty to care’. We
are naturally hard working and perfectionistic personalities, and
above all, we are working in an environment where high levels of
responsibility and high levels of uncertainty collide. Our patients
and colleagues don’t need doctors who doubt themselves. And yet
I do. I just hope no one finds out.

And then something curious happened. I found myself in yet
another situation where I was berating myself for not coping and
not being good enough, when I had a thought: what if something is
happening to me?

I started asking for help. I even managed to convince a
neurologist to do an MRI of my brain. I found myself sitting in a
psychiatrist’s office, feeling embarrassed, but then he helped me
formulate a thought that had been brewing in the back of my mind:
I have injured my brain at work. Luckily, I happened on a psychiatrist
who is also a researcher, and thinks like I do.

There has been a lot of research about the effects of sleep
depression and chronic stress on the brain. The first article I read
about this was a 2001 study⁶ looking at chronically jet-lagged flight
attendants over five years. It was a small sample, but it suggested
that chronically raised cortisol levels and altered melatonin profiles
made their temporal lobes and hippocampi atrophy, making them
score worse on computerised cognition tests. More recently, in a
2018 paper⁷ the researchers describe using functional MRI and
wearable sleep-tracking devices to investigate how acute sleep
depression alters the grey matter volume (GMV) in the brain,
explaining the real effect of impaired cognition and memory
impairments after periods of sleep deprivation. Mercifully, they also
showed how brains recover normal volume after periods of ‘sleep
recovery’. My brain wasn’t shrunk forever.

Sitting at home one evening, scrolling through the MRI slices
of my own brain, I realised that it was an organ. An injured part of
my body. I was like a training athlete that has torn a hamstring.
Honestly, for a moment I thought that I was the first to come up with
the idea of viewing surgeons as athletes, but there has been much
written about it. Dr Edward Verrier is an American cardiothoracic
surgeon who transcribed a lecture for the American College of Surgeons in 2017.⁸ It’s a recollection of his training days
and how his love for sports has informed his decisions as a surgical
programme director over the years.

Both athletes and surgeons are attracted to the field because
they have talent. Both realise quickly that it’s going to take more
than talent to succeed. Both have to rely on physical dexterity and
improvisation, and both have to manage a team of people to have
a good outcome. Both need regular, deliberate exercise to reach
and maintain peak performance: they are antifragile. But athletes
have coaches.

I have a friend that has been very involved in training, and doing
research on, elite level cyclists. Discussing this idea with him, he
mentioned that most of a coach’s job, at that level of performance,
is to make sure that training is effective, and that there is enough
time for recovery between sessions to ensure that the performance

¹ ICD-11 code: QD85
² Antifragile, by Nassim Nicholas Taleb
³ Wolff’s law: as function, so structure
⁴ Taleb’s work, particularly on antifragility
⁵ Impostor Syndrome
⁶ 2001 study on chronically jet-lagged flight attendants
⁷ 2018 paper on using functional MRI and wearable sleep-tracking devices
⁸ Lecture transcribed by Dr Edward Verrier
peaks actually go up with time. They constantly have to hold the athletes back. Explaining how difficult it can be to monitor athletes, he mentioned something called the ‘breakfast test’. Imagine a cycling team on tour, staying at a hotel. Now imagine the coach going down to the dining hall really early, before any of the cyclists have come down for their breakfast. Then he observes them as they descend on breakfast, unaware that they are being watched. Athlete A might always look hung-over at this time of the morning, but athlete B is usually bright and on top of things, but today they look equally groggy. It’s a complex process of interpreting trends and seeing warning signs that are specific to the individuals. As healthcare professionals we are expected to manage our own rest and recovery, and honestly, who better than doctors? But, somewhere along the line, I wasn’t being objective about myself and my performance anymore, I couldn’t see my performance dropping. Something unexpected that came from using this different terminology, was that others around me started talking too, as if the stigma had been lifted, and I became much more aware of how much strain the people around me were experiencing. I see myself as a near-miss in a way, and this is the part of the essay where I think of the friends and colleagues who didn’t make it through the programme and the one who didn’t make it at all.11

To go back to Taleb’s book, he goes on to describe ways to measure the antifragility of abstract systems like economic markets. It is a bit too abstract to try and measure an individual’s ability to bounce back after stress, but I believe that it is something we can learn, and coach each other in. Not just for registrar training, but for living as an orthopaedic surgeon, and surviving all the stresses life will throw at us, while maintaining high levels of expertise and competency.

I was very happy to learn about the peer-reviewing processes that the SAOA is instituting, and it is a sign that our profession is making healthy decisions about its future, making itself antifragile, and ready for the stress and strain to come.

References