

Which doctors would make the best skin surgeons? Can we predict ability prior to training?

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Skin surgeons apply physical as opposed to pharmacological interventions to alleviate skin pathology. This encompasses treatments using electromagnetic radiation, heat energy as well as more traditional surgical modalities namely, the use of surgical steel. This essay will explore the features that may prove to be advantageous in a skin surgeon and how we might predict or evaluate them.

“A good skin surgeon”

“The conditions must be met by all surgeons, first, he must be educated, second, he must be deft, third he should be ingenious, fourth he must be indulgent”

Guy De Chauliac, 1363

Guy de Chauliac was in many ways an eminent illuminary surgeon of the Middle Ages, and despite the fact that Dermatological surgery only became a recognised specialty recently, Chauliac’s ideas remain very relevant today.

“Educated” - Leon Goldman, (figure 1) a skin surgeon, and considered to be the father of lasers in medicine and surgery, was able to use his education in physics to pioneer the application of lasers to treat disease. Classically, education pertains to the acquisition of knowledge and skills but also the ability to take interest in the world around oneself, to listen with care, to think critically and solve issues logically.



Figure 1: Leon Goldman



Figure 2: Two-step Flap Surgery

“Deft”- skin surgery is a skills-based rather than procedure based surgical speciality, therefore to approach each case the surgeon must be proficient, skillful and move with ease to achieve each individual outcome (figure 2). However, a surgeon's deftness does not only refer to technical skill - a good skin surgeon must also deftly communicate with patients, deftly diagnose and interpret clinical information.

“Ingenious” - Frederic Moh (figure 3) was able to use his ingenuity to revolutionise the treatment of skin cancer. His commitment to questioning the status quo treatment modalities and to innovate them is something that all good skin surgeons should aspire to do. Skin surgery has been a speciality subject to rapid technological advances, many procedures that are commonplace today could not have been imagined just 40 years ago.



Figure 3: Frederic Moh



Figure 4: BSDS logo

“Indulgent” - Dr Stanley Comaish and the committee that founded the BSDS (formerly BDSG) were dermatologists who saw the potential of skin surgery. They pioneered training programs in the UK, welcoming others to train UK doctors, jousting the uproar from other surgical specialities in response to their proposal. With their indulgence - a readiness to be open-minded - they have allowed dermatological surgery to evolve as an exciting subspeciality option.

Although these examples only provide anecdotal evidence, subjective in nature, they allow us to consider real examples of eminent skin surgeons and some of the traits they exemplified.

The talented or the trainable?

To be truly “elite” a trainee requires a combination of talent, trainability and coaching (1).

“It matters not what someone is born, but what they grow to be.”

Albus Dumbledore JK Rowling, 2000

Firstly, let us consider innate abilities or talent. The argument between innate talent vs. dedicated training is fundamentally a spin-off of the classic nature vs. nurture discussion. 19th-century author of “Hereditary Genius”, Sir Francis Galton was perhaps the first scientific advocate of nature over nurture. His theory¹ has since had a lasting impact on our cultural views of ability which has led communities to believe in “geniuses”, “prodigies” and “naturals” implying best skin surgeons are born not made. However, the 80s saw educational academics challenge and change these views with pioneering research, namely that of Benjamin Bloom. Bloom examined the critical factors common to all elite performers and found no significant indication of innate ability². Later research published in the *Cambridge Handbook of Expertise and Expert Performance* confirmed Bloom’s findings by compiling the research of 100s of scientists studying *expertise* in fields including surgery, more importantly, a wide range of other activities including chess, writing and aviation. The limited literature that supports inherent ability in surgery or recognises differences in learning curves in surgery which could be a reflection of innate ability often focus on the short-term effect of simulator-based practice of technical skill which only provides a snapshot of the complex multifactorial process required to become elite (2). In summary, although innate ability may play a role in surgical training and put some individuals ahead in some basic competencies a recent review by Sadideen et al concluded that talent alone is insufficient to produce a surgical expert. Similarly, opinion, educational theory and pertinent literature also indicate “consistently” and “overwhelmingly” that surgical experts (including skin surgeons) are always made, not born (1,3). Therefore predicting surgical ability based on talent and skill prior to training is not appropriate.

¹The Galton theory dictates that relevant heritable capacities set the upper bound for an individual’s physical, intellectual and cognitive achievements

² Apart from height and body size in sport

“If you want to get good at something - get a coach”
Atul Gawande, 2017

Trainability concerns itself with motivation, resilience and willingness to participate in deliberate practice. Coaching is an external factor that only produces results in those with high trainability. The notion that excellence is primarily down to sustained purposeful and adaptive practice has been supported and the rule remains unbroken across many disciplines including medicine (4), sciences, arts, sports (3) and even skills like reading or traits like charisma. This concept is best described by Ericsson who tried to address the fundamental theoretical challenge to explain why some professionals reach a stable performance whereas other “expert” performers are able to continually improve over years and decades. Surgery is no exception, the literature has concluded that even amongst surgeons with high caseloads for a specific procedure there a large individual differences in outcomes; this difference exceeds the variability that would be expected due to chance alone (5,6). Ericsson concludes that those that who are able to become “the best” show deliberate, sustained practice with an underpinned determination to improve. They become adaptive learners (7).

Predicting ability? Is it possible?

“All we have to decide is what to do with the time that is given us.”
J. R. R. Tolkien, 1954

The discipline of surgical dermatology requires a broad set of skills to achieve excellence. Chauliac’s ideas are not outdated - a good skin surgeon should demonstrate the ability to be educated, deft, ingenious, indulgent. However, these metrics are not appropriate predictors of ability due to their subjective nature. Predicting ability should not focus on the traits themselves but evidence of trainability in each respective one as ultimately each can be acquired through careful training and mentoring. Panels should also identify individuals willing to accept coaching, seek criticisms and make honest self-assessments. It is the candidates that show the promise of trainability that can become the next generation of world class skin surgeons.

(word count 986)

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