Editorial

Oculoplastic and Orbital Surgery
Millennia in the Making
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As part of the American Ophthalmological Society’s 150th birthday celebration in 2014, a representative from each subspecialty was invited to provide a brief account of the past, present, and future of his or her respective area of interest. Before offering my perspective on oculoplastic and orbital surgery, I must begin with a disclaimer. The historian C. B. McCullagh, in a thoughtful essay about bias in reporting historical events, opined that “both nature and history are sublime, and any account of them is inevitably selective.” Therefore, the topics that I have selected to feature inevitably reflect my personal biases. I have grouped 15 highlights into the following rubrics: 5 milestones before 1864 (the year the American Ophthalmological Society [AOS] was founded), 5 notable advances between 1864 and the present, and 5 challenges for oculoplastic and orbital surgery going forward.

Long before anyone knew about cupping, the choroid, or the chiasm, surgeons were whittling away on the ocular adnexa. Our first milestone is found nearly 38 centuries ago, around 1772 BCE, with Hammurabi, the King of Babylon. The following passage from the Hammurabi Code has been interpreted putatively as a description of an infected dacryocystitis: “If a physician operate[s] on a man for a severe wound with a bronze lancet and cause the man’s death; or open an abscess (in the eye) of a man with a bronze lancet and destroy the man’s eye, they shall cut off his fingers.” Unfortunately, the account also confirms that severe penalties for malpractice or poor outcomes have dogged surgeons since antiquity.

We jump ahead to the acme of the Roman Empire to milestone number 2: the writings of Celsius. Even though Hirschberg disparagingly asserted that Celsius was merely an aggregator rather than an innovator, this work nevertheless is remarkable. Consider that, before the first book of the New Testament had been written, Celsius included descriptions of advancement and rotational flaps to repair skin defects. Additionally, his account of surgery for lax eyelids, from roughly 30 CE, is astonishingly recognizable to blepharoplasty surgeons: “seize a fold of skin between finger and thumb… consider how much to be removed for the lid to be in a natural position… where the incision is to be made… mark by two lines of ink… the edges of the wound are brought into apposition by one stitch… a sponge of cold is bandaged on… on the fourth day the sutures are taken out and a salve for repressing inflammation is smeared on.”

Moving forward, any journey through medical history must at least pause and wave to Vesalius. However, my bias is not to label De Humani Corporis Fabrica a milestone in our subspecialty’s history. Why? Because some of his ocular adnexal descriptions were just plain wrong. Rather, I confer my third milestone on Vesalius’ student and ultimately his successor as chair of anatomy at Padua, Gabriele Falloppio, who, in his modest monograph in 1562, provided the first good description of the levator palpebrae superioris in addition to demonstrating that the retractor bulbii muscle does not exist in humans—an insight contrary to the teachings of Vesalius.

Milestone 4 is for Georg Bartisch’s monumental Ophthalmodouleia of 1583. As with Celsius, many of Bartisch’s depictions are easily recognizable: proptosis, ectropion, epibulbar and eyelid tumors, trichiasis, dacryocystitis, and dermatochalasis. Some might argue, however, that Bartisch’s recommended treatment for removing excess eyelid skin—strangulation clamps—is a step backward from Celsius.

Choosing a fifth and final milestone from before 1864 was a challenge. Carl von Graefe has been regarded by many as the founder of plastic surgery. His contributions indeed were colossal, not to mention the gift of his son, Albrecht, to our field. However, as with Vesalius and Falloppio, I have to move on from teacher to student and recognize Johann Dieffenbach as the founder of modern plastic surgery. Like Falloppio after Vesalius at Padua, Dieffenbach succeeded von Graefe as Professor of Surgery at the University of Berlin on von Graefe’s death in 1840. Dieffenbach moved the field forward tremendously with his surgical textbooks in the 1840s, describing many operations that set the stage for modifications that we still use today.

Next, I’d like to highlight 5 major advances from 1864 to the present. Given that plastic surgery is essentially applied anatomy, my first milestone recognizes the marvelous contributions of S. E. Whitnall, whose anatomy textbook, first published in 1921, is a tour de force. In addition to his original observations, such as the eyelid ligament that bears his name, his descriptions are beautifully written and replete with timeless insights. Although Whitnall was an anatomist, his book reads like a surgical atlas.

Milestone number 2 honors a member of the AOS, Wendell Hughes, whose AOS membership thesis in 1941 was so extensive that it was not published in the Transactions, but rather as a standalone monograph 2 years later. His work set a new standard for eyelid reconstruction or a term that he preferred, blepharopoiesis (and one that I’ve not yet had the courage to include in a surgical dictation or in a bill to Medicare).
Dr. Hughes is perhaps best known for his procedure to reconstruct large defects of the lower eyelid. Two important themes of his work were to repair “like with like” and to accomplish “more with less.” Before this time, many reconstructive operations were far more involved, that is to say, far more invasive, than was necessary. After retirement, Dr. Hughes continued to publish, including advice on using motor oil rather than water in lawn rollers and instructions on how to carve the perfect grapefruit. Ever the innovator.

Milestone number 3: imaging. The first computed tomography scanner in North America was installed at Mayo Clinic in June 1973. The initial examinations focused on anatomic features north of the pituitary, but fortunately radiologists soon realized that the truly interesting pathology was in the orbits, and within 2 months, a patient with proptosis resulting from a retrobulbar cavernous hemangioma had been scanned. The highly pixilated images were included in a seminal article that was published the following year and coauthored by 2 AOS members, Thomas P. Kearns (recipient of the Howe Medal in 1994) and John W. Henderson.

Contemporary computed tomography and magnetic resonance images provide infinitely more information, including real-time intraoperative navigational guidance, while requiring far less imagination to interpret than those early scans. The future of imaging seems boundless and may require far less imagination to interpret than those early real-time intraoperative navigational guidance, while advances that oculoplastic surgery has made in learning when to release evil humors. Using surgery to treat cytokines is fighting the wrong war.

Third, on the theme of combat and of making holes in people’s heads, when treating cancer, we need to figure out ways to eliminate the enemy without carpet bombing. Resorting to exenteration is end-stage ophthalmology. Regrettably, during my professional lifetime, our success in treating sebaceous gland carcinoma, Merkel cell carcinoma, lacrimal gland adenoid cystic carcinoma, and melanoma has been disappointing at best.

Fourth, in those instances when we must remove an eye, we need to identify the perfect socket implant. Surgeons have placed dozens of different varieties into innocent, unsuspecting sockets during the past century, but each has had major drawbacks. Finally, watching a socket enter the death spiral of severe contraction emphasizes that we need a better understanding of abnormal wound healing—why it occurs and how we can modulate it.

Of note, the challenges that I have highlighted—blepharospasm, Graves ophthalmopathy, oncology, and wound healing—likely will be treated nonsurgically in the future, which may have significant implications for our subspecialty.

On that theme, I would have liked to explore the advances that oculoplastic surgery has made in learning when not to operate, for instance, in many cases of orbital blowout fractures. We know that observation is often appropriate, but some surgeons in some specialties continue to operate on virtually every fracture. This is unconscionable in contemporary medicine and emphasizes the need for better interdisciplinary collaboration.

Also, time constraints have prohibited more than a passing mention of lacrimal disease, which is a major part of our practices. It also would have been enlightening to review a few creative ideas that fortunately didn’t quite catch on, such as the use of chopsticks rather than forceps and patient-torturing devices to bolster a skin graft.

In closing, it is humbling to realize that Celsus, Bartisch, or Dieffenbach likely could scrub right in on some of the operations we do today. Although, come to think of it, scrubbing might seem to be a puzzling ritual to them. And they might well be puzzled by the embarrassing behavior that sometimes characterizes our specialty, for instance,
billboards advertising that Medicare will pay for eyelid lifts. I suggested at the beginning of this editorial that our subspecialty is the oldest among our profession, and at times our actions seem to resemble the oldest profession. Perhaps I should have included the necessity to continually pursue professionalism as another challenge going forward.

Regardless, oculo-plastic and orbital surgery is a unique facet of ophthalmology, crossing boundaries with several other surgical and medical disciplines and comprising arguably the widest spectrum of operations in its repertoire: the repair of eyelid malpositions such as ptosis, retraction, ectropion, and entropion; trauma; trichiasis; a gamut of lacrimal disorders; evisceration, enucleation, and exenteration; tumors; the reconstruction of an endless variety of adnexal and facial defects; orbital, socket, and sinus surgery; and, of course, an increasing palette of cosmetic offerings. But one thing is certain: our subspecialty is the most fun.

Acknowledgment. References 3–6 and 9–12 provided courtesy of Mayo Clinic Libraries History of Medicine Collection.

References

6. Falloppio G. Observationes anatomicae. 1562.