What does curiosity have to do with being a surgeon?

John (Jeb) Hallett, MD, FACS
Clinical Professor of Surgery
Medical University of South Carolina
Charleston, South Carolina
No Disclosures
“Why are you so curious about everything?”

*Linda S. Austin, MD*

My wife and “in-house” psychiatrist
And, why are you so damn happy all the time?
How does curiosity begin?
Success and satisfaction over a long career in surgery is enhanced by curiosity of the craft and the science

........and challenged by the courage and perseverance to question and change both
Stress and Burnout Among Surgeons: Understanding and Managing the Syndrome and Avoiding the Adverse Consequences FREE

Charles M. Balch, MD; Julie A. Freischlag, MD; Tait D. Shanafelt, MD


Training for and practicing surgery are stressful endeavors.1-4 Studies5-11 involving national samples of surgeons from surgical subspecialty societies and graduates of surgical training programs suggest that burnout rates among surgeons range from 30% to 38%. These statistics indicate that a substantial number of our colleagues are struggling with personal and professional distress at a level that should be of concern to all surgeons.
The most inspiring and successful surgeons have both curiosity and courage
Objectives of this Presentation

• Highlight the history of curiosity and courage in advancing surgical care
• Focus on how “curiosity” adds to the career-long personal success and satisfaction
• Place surgical innovation in the context of expectations of the current transformation in healthcare
The History of Surgical Curiosity
If your life depended on it, how would you do it?
A Virginia Boy
“The Fateful Murmur”
The Roper Hospital

Charleston, South Carolina, 1943
“He introduced the idea that something could be done”
EXPERIMENTAL AORTIC VALVULOTOMY
A Preliminary Report
HORACE G. SMITHY, M.D., and EDWARD F. PARKER, M.D., F.A.C.S.,
Charleston, South Carolina

The possibility of a direct surgical approach to the problem of chronic valvular disease of the heart has been considered by surgeons for many years. Since the proposal of Brunton, in 1902, in which hope was expressed for the ultimate relief of mitral stenosis by surgical means, little of significance has been accomplished despite numerous clinical and experimental observations by several investigators. In an effort to develop a safe method of approaching the aortic valve, which conceivably might be applied to the surgical treatment of aortic stenosis in human subjects, aortic valvulotomy was performed in a series of dogs as described below.

It is not within the scope of this preliminary communication to review entirely the development of surgery of the heart valves. Sufficient to say that most observations heretofore recorded have concerned the clinical and experimental aspects of the production and relief of mitral stenosis. A complete review of the subject, including the earlier work of many physiologists, can be found in the extensive article of Cutler, Levine, and Beck (8). While very few studies have been reported on the production and relief of aortic stenosis, the latter investigators as well as Allen and Graham (2, 3) have mentioned, without elaboration, division of the aortic valves in dogs by means of a cardioscope. Tuffier (19) apparently made the only recorded attempt to relieve aortic stenosis in a human patient. His procedure consisted of digital invagination of the wall of the aorta into the ring of the aortic valve, thus dilating it, instead of incising the valve with a knife as he had intended to do at the outset of the operation.

Recent progress in surgery of the heart and great vessels, notably the brilliant work of Blalock in pulmonic stenosis, Gross (10, 11) in coarctation of the aorta and Alexander and Byron in aortic aneurysm, has served as a stimulus in conducting the following experiments.

MATERIAL AND METHODS
Mongrel dogs were used. Anesthesia was obtained by the intravenous administration of sodium pentobarbital. The thorax was entered through an incision in the left fifth intercostal space, whereupon a previously inserted intratracheal catheter was attached to an artificial respirator delivering an interrupted flow of atmospheric air under positive pressure. Full exposure of the heart was obtained by self-retaining rib-spread ing retractors. The pericardium was opened near the apex anterior to the phrenic nerve and incised vertically upward to its reflection from the ascending aorta. By blunt dissection, the proximal third of the ascending aorta was freed sufficiently to pass a ligature of medium sized silk around it. Traction on this ligature was used to deliver the first portion of the aorta into the wound when desired (Fig. 1). A small area of the presenting lateral surface of the ascending aorta next was denuded of its well defined fatty coat, the fat tissue being bluntly pushed aside without actually excising it. Either a stay suture of fine silk or catgut was then placed in the periaortic fat in the form of a pursestring or interrupted sutures in the fat were used (Fig. 1), the former proving the most satisfactory. In some animals an attempt was made to secure stay sutures in the wall of the aorta itself with discouraging results (Table II). Having placed the periaortic fat sutures, the denuded area of the aortic wall was punctured with a No. 11 Bard-Parker blade, producing a very small opening. Ensuing hemorrhage was controlled.

Fig. 2. Schematic representation of longitudinal section of aorta showing perforation of valve leaflet. Withdrawal upward of barbed blade divides free margin of cusp.
November 29, 1947

Medical College
Charleston, South Carolina

Attention: Doctors H. G. Smithy
H. R. Pratt-Thomas
H. P. Deyerle

Gentlemen:

September 11th, the Associated Press carried a report by Howard T. Flakeslee of a heart operation performed by you. I have been especially interested as I have the condition described in the article. I am 21 years of age, and have had a mitral stenosis following scarlet fever since the age of ten. For the past two years, I have been in cardiac failure, with extreme congestion of the lungs and liver and all the accompanying symptoms. Just now the condition is becoming more acute and the usual procedures—diuretics, diet, and bed rest, seem to have lost their effect. Dr. H. W. Beck, of 420 McKinley Ave. N. W., Canton, Ohio, my physician and one of our leading cardiologists, mentioned an operation of this type some time ago, and since reading your report, I have felt I should be very much interested in any information or help you could give me. Dr. Beck will be glad to give you my case history if you wish. I shall appreciate hearing from you at your earliest convenience.

Very truly yours,

(Miss) Betty Lee Woodrige

915 Mahoning Rd. N. E.
Canton, Ohio
More later on the courage of this young patient and surgeon....
Your Personal Professional Curiosity
How does “curiosity” add to the personal success and satisfaction of a long surgical career?
The Craft and the Science
Curiosity for the Craft of our Hands
So, you want to be a surgeon?
Will you have good enough hands?
The fortitude to make it?
The Craft
“We lived in fear of the mountains of Spain, over which we had yet to fly, and in awe of our elders.”

Wind, Sand, and Stars
Antoine St Exupery
The “elders”

Robert Smith, MD

David C. Sabiston, MD
Observe the “master surgeons!”
What is a “master surgeon?”

• Extraordinary mastery of surgical anatomy
• Highly organized OR plan
• Simplest approach to complex problems
• No “wasted moves”
• Steady “in troubled waters”
• Large, steady volume over time

The Mayo Brothers
Invent what you need!
Curiosity in the Science of Surgery
Where do the ideas to advance the science originate?
Embrace the failure around you
The Failure of Successful Design
A case that led to a curious advance in surgery

- A 38 yo patient underwent a long operation to repair a visceral artery gunshot wound.
- Multiples units of transfusion and IV fluid
- Temperature at end of case: 32 degree C
- In the first 24 hours postop, he “blew up” like the Michelin Man, gaining nearly 24 pounds
- His forearm skin split open in several places
What’s going on here?
Listen to the residents and fellows!!

The mechanisms and prevention of intravascular fluid loss after occlusion of the supraceliac aorta in dogs

Russell G. Bourchier, MB, ChB, Peter Gloviczki, MD, Mark V. Larson, MD, Qing-hua Wu, MD, John W. Hallett, Jr., MD, David A. Ahlquist, MD, and Peter C. Pairolero, MD Rochester, Minn.

Mechanisms of intravascular fluid depletion after temporary occlusion of the supraceliac aorta were investigated in a canine model. During ischemia and reperfusion, hemodynamic parameters, superior mesenteric artery flow, intestinal mucosal perfusion, and mucosal permeability were monitored. After 12 hours of reperfusion, the volumes of intravenous electrolyte fluid required to maintain hemodynamic stability and fluid lost into the gastrointestinal tract and peritoneal cavity were measured. The distribution of total body...
Hypothermia is BAD for you!

We conclude that aortic occlusion and reperfusion results in increased requirement for intravenous fluid as fluid shifts into the intracellular space and is lost into the gastrointestinal tract. These fluid shifts are increased by hypothermia but can be minimized by superoxide dismutase. (J VASC SURG 1991; 13:637-45.)
Cold Kills!!!!!
Just Using What Was Around the House

• Plastic clothing bags

• Tubing from his mother’s dryer

• Heat pump from his father’s garage

• Some Duck Tape
3M™ Bair Hugger™ Model 505 warming unit

3M™ Bair Hugger™ therapy temperature management units have become the standard of excellence in forced-air warming. The Bair Hugger therapy Model 505 provides safe, quiet and effective warming to patients around the world.

- Small size frees up more usable workspace
50,000 Bair Huggers per Day
Curiosity + Courage
Curiosity and courage of a patient and a surgeon
New Heart Operation Saves Life of Woman
As Surgeon Cuts Into Valve He Cannot See

CHARLESTON, S. C., Feb. 9—A new heart operation that offers hope to thousands of rheumatic fever victims and other persons whose diseases have clogged valves inside their hearts was performed successfully here ten days ago by Dr. Horace G. Smithy, Assistant Professor of Surgery at the Medical College here and prevailed upon her physician to send her for an operation.

The patient was Betty Lee Woolridge, 21 years old, who came from her home in Canton, Ohio. She had been a virtual invalid when her heart was clogged by a valve. The operation took place on the 18th, and it was predicted today that Miss Woolridge could look forward to a fairly normal life.
Who can dare save Smithy?
Dr. Alfred Blalock

© Karsh

One of the photographic studies done by Yousuf Karsh, to mark the official “1,000th blue baby” procedure performed by Dr. Alfred Blalock.
Last Hope for Smithy

“Horace Smithy was in the operating room at that time, and I looked over at him and saw his face fall. He thought that this was his only chance at having a successful operation for himself.”

Denton Cooley, MD
Chief Resident, Hopkins
Healthcare Transformation
The Megatrends and Demands

• The population over 65 grows at 8000 per day!!!

• The pressure to deliver value care at a lower cost is increasing (Less for Less)

• Disruptive technologies and new processes of care are coming fast and furious

• The Affordable Care Act (Obamacare), more healthcare laws and regulations, and FDA scrutiny perplex us all
So, what are surgeons to do?
Some Areas for Your Curiosity

• Advancing computer-assisted, robotic surgery
• Focusing on more precise decision making, less invasive and less costly surgical options (Population surgery)
• Developing biologic solutions to disease
• Telehealth and telemedicine care
Nurture Curiosity and Courage
Your flight through your surgical life can be sustained by the power of your curiosity and your courage to do the right thing.
Thank you for the privilege