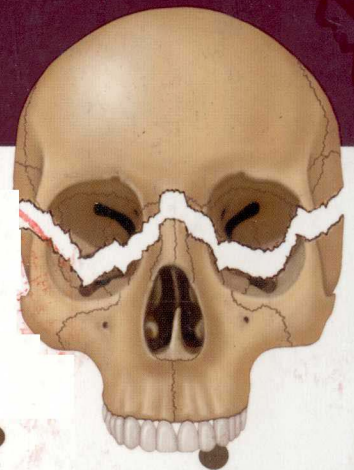


oral & maxillofacial trauma

fourth edition



FONSECA

WALKER • BARBER
POWERS • FROST

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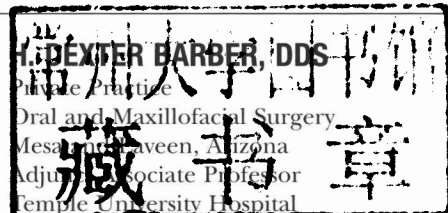
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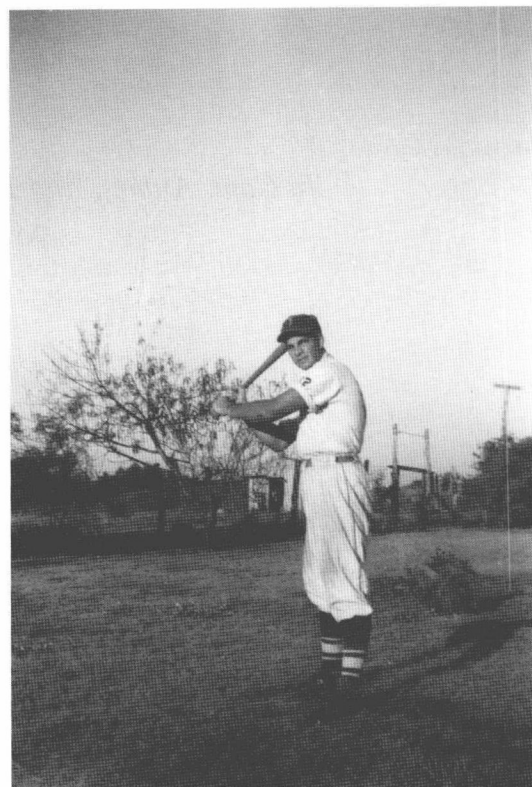
In Memoriam

Dr. Walker, fondly referred to as “R.V.,” dedicated his long career to the discipline of oral and maxillofacial surgery and the promotion of the specialty through research, education, administration and service to patients. Robert V. Walker, “Bob” Walker, R.V. Walker, was born September 21, 1924 in Satin, Texas. Son of a hard-working farmer father and an education-oriented mother, R.V. learned skills and attributes that took him off the farm and well beyond. He started college at Texas A&M in 1941, and his athletic abilities earned him a place on the baseball team and a letter.

He won the Best-Drilled Cadet award due to motivation and dedication to the task at hand. When World War II started, R.V., as a member of the Corps of Cadets, was inducted into the military, went through basic training and was sent back to Texas A&M until the army assigned him to Baylor College of Dentistry in 1944. He graduated from dental school in 1947, the same year he married Emily Berger. One year of minor league baseball for the Tulsa Oilers convinced him that dentistry was a more reliable form of employment, so after dental school at Baylor College of Dentistry, he started a general practice in Waco, Texas. Being called to serve in the military once more in the Korean War, he was assigned to Brook Army Medical Center in San Antonio, mostly for his baseball skills. While at San Antonio, he was introduced to oral surgery and facial trauma in a major way and developed his lifelong connection to trauma as a facet of oral and maxillofacial surgery. Dr. Walker completed an oral surgery residency in 1956 at Parkland Memorial Hospital. He joined the UT Southwestern faculty that same year, and 2 years later was named as professor of surgery and chairman of oral and maxillofacial surgery, a position he held until 1984. He remained on the full-time faculty until 1997, when he was named professor emeritus.

He developed one of the top training programs in the country. While shaping a solid curriculum during his early years as chairman, he also worked diligently at the national level. He helped establish essentials for the education and training of oral surgeons across the country and helped create an accreditation system through the Council on Dental Education of the American Dental Association (ADA), the American Board of Oral and Maxillofacial Surgery (ABOMS), and the American Association of Oral and Maxillofacial Surgeons (AAOMS).

His early work with these associations eventually led to the creation of a seat for the ADA on the Board of Commissioners of the Joint Commission on Accreditation of Hospitals. He worked on the committee that helped launch the First International Conference on Oral and Maxillofacial Surgery, which was held at the Royal College of Surgeons in London in 1962. This led to the formation of the International Association of Oral and Maxillofacial Surgeons, of which Dr. Walker was a founding fellow. He served as president of that organization for many years. He also served as president of the American Trauma Society, the AAOMS, the ABOMS, the Texas Division of



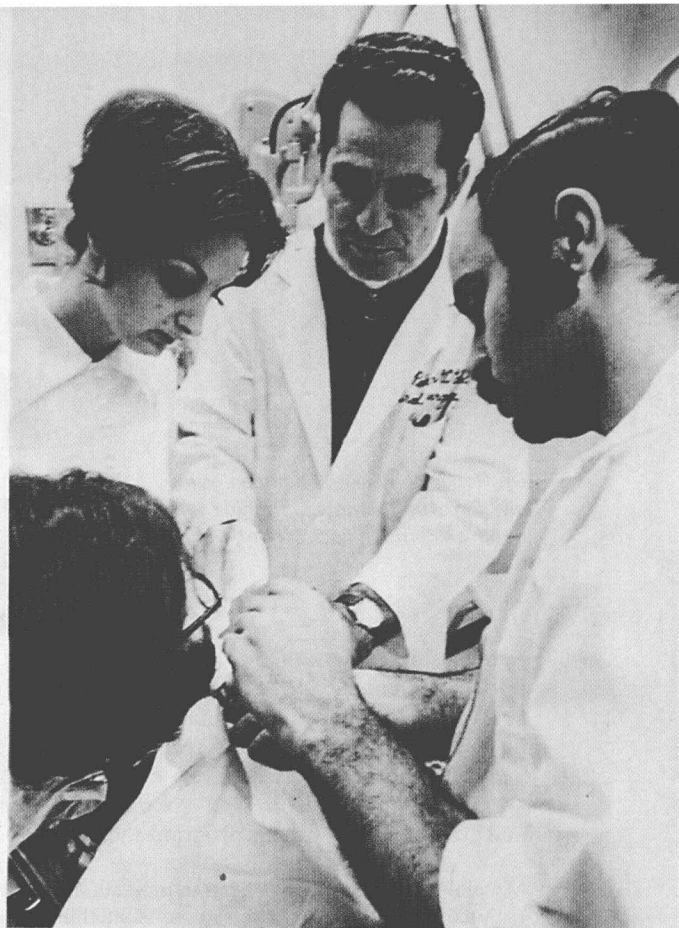
the American Cancer Society, and the Southwest Society of Oral and Maxillofacial Surgeons. He was chairman of the Oral and Maxillofacial Surgery Foundation, which established the Robert V. Walker Society in his honor in 1997.

Dr. Walker received many awards, including distinguished service awards from the Texas Dental Association (2003), American Trauma Society (1992), and the AAOMS (1981); the William J. Gies Foundation Award in Oral and Maxillofacial Surgery (1976); and the Robert V. Walker Chair in Oral and Maxillofacial Surgery at the University of Texas Southwestern Medical School at Dallas (1992). The annual meeting of the AAOMS was dedicated to him in 1987, and he was elected to the Baylor College of Dentistry Hall of Fame in 1999. He was appointed professor emeritus of oral and maxillofacial surgery at the University of Texas Southwestern Medical School at Dallas in 1997.

Dr. Walker has received nearly three dozen awards and honors from his peers in dentistry and oral surgery worldwide. Most notably, he was made a fellow of the Royal College of Surgeons of Ireland in 1973 and a fellow of the Royal College of Surgeons of England in 1984, where he gave the prestigious Charles Tomes Lecture. He also served on the Baylor College of Dentistry Oral Health Foundation board of trustees. In September 2012, Dr. Walker was posthumously named Distinguished Alumni of Texas A&M University.

The Following JADA Article Appeared in May 1973

Patient in oral surgery clinic is examined by Dr. Robert Walker, center, and Raymond Fonseca, right, a resident in Dr. Walker's oral surgery program, assisted by staff nurse Gretchen Brown.



The Walker program for advanced education in oral surgery

Robert E. Dunbar, MSJ, Chicago

Oral surgery, as a dental specialty, has become increasingly important in dentistry and in dentistry's role in total patient care. This is reflected in the emergence of several outstanding advanced education programs in oral surgery that have brought national and international preeminence to the profession.

One of the most progressive and innovative programs is directed by Dr. Robert V. Walker, professor of surgery and chairman of the division of oral surgery at the University of Texas Southwestern Medical School in Dallas. He is also president of the American Society of Oral Surgeons.

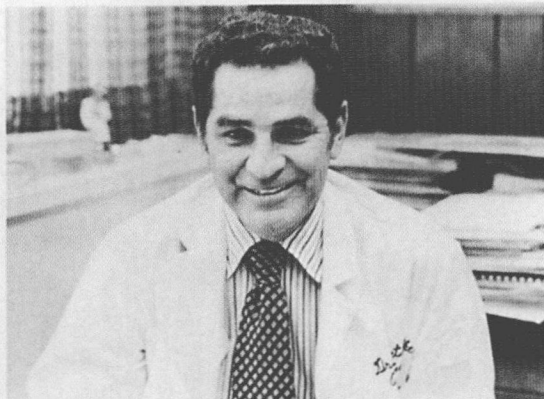
Dr. Walker has contributed several major innovations to the specialty, including maxillary orthognathic surgery, which was performed for the first time in this country at Parkland Memorial Hospital, the base hospital in Dr. Walker's program. He also produced the first article on this procedure in this country, published in 1963 in the *Journal of Oral Surgery*.

He has earned a reputation for his work in

arthroplasty for the ankylosed temporomandibular joint; this procedure has been performed on more than 70 arthritic patients at Parkland thus far. The procedure includes extensive physiotherapy as a follow-up to make certain that the remade joint is functioning well.

Only three or four students are accepted into Dr. Walker's residency program each year, although the number of applicants is usually well over 100. It is a four-year program, and the number of residents at any one time will number up to 16. This past year he accepted four students: two were dental school graduates, and two were senior dental students—Raymond Fonseca of the University of Connecticut and John Dann of Harvard.

Because the final year is completely elective at both schools, both Mr. Fonseca and Mr. Dann are completing their senior year of dental school and the first year of Dr. Walker's residency at the same time. Additionally, Mr. Fonseca is now completing his fifth and final year under the American Fund for Dental Education's



Dr. Robert V. Walker, chairman of the division of oral surgery, University of Texas Southwestern Medical School, Dallas.

Scholarship Program for Disadvantaged Minority Students.

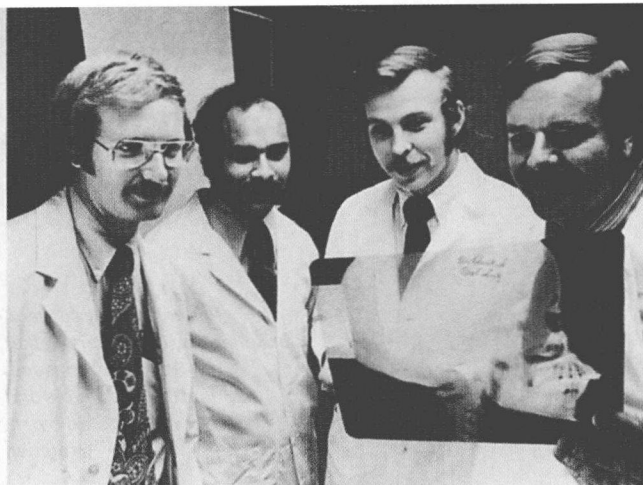
Dr. Walker considered many factors before he made new appointments to his program last year. His standards, which are extremely high, are the central reason why so many students and graduates apply to his program each year.

My philosophy has always been to pick out a guy that I think really has potential to be something else, something different. He doesn't have to be the top man in his class, but if he has demonstrated the intellectual capacity that is needed and has the statesmanlike qualities that are essential for high-level competition in a cauldron of activity in a major health complex, I'll go with that guy.

We didn't take Fonseca and Dann simply to be innovative. They were evaluated on exactly the same basis that I was evaluating people who had graduated from dental school or who had been in practice or in some branch of the armed services. I also looked into their dental school curriculums to see if they were progressive and if they gave them the strengths in basic science education which I think are essential to this program.

Two residents tell of surgery and research

Both Mr. Fonseca and Mr. Dann were exposed to clinical oral surgery soon after their arrival in Dallas last summer. After six weeks of intensive



Inspecting radiograph are, left to right, Dr. D. Gary Wolford, who heads the oral surgery program at the Veterans Administration Hospital in Dallas, residents Raymond Fonseca and John Dann, and Dr. Bruce N. Epker, director of the oral surgery program at John Peter Smith Hospital, Fort Worth.

experience in the operating rooms and clinics at Parkland Memorial Hospital, Mr. Dann was assigned a research project. Mr. Fonseca continued his surgical experience until the first of this year. He spent his first three months at John Peter Smith Hospital in nearby Fort Worth and the remaining three months at Parkland.

■ *Fonseca's experience in surgery:* One of the highlights of Mr. Fonseca's experience was a case involving orthognathic surgery on which he was the surgeon. A 16-year-old boy came to the oral surgery clinic complaining of a sore tooth. Mr. Fonseca examined the patient and saw immediately that he had maxillary and mandibular protrusion as well as retrogenia. He recommended reconstructive surgery and was assigned the case.

During an interview in December immediately after the operation was performed, Mr. Fonseca described the procedures involved.

I took cephalometric and periapical radiographs as well as a panoramic radiograph. I then analyzed his case and decided what had to be done. I cut before-and-after models to mimic the surgical procedure and presented them to Dr. William H. Bell, who coordinates our orthognathic surgery at Parkland.

We decided to make mandibular and maxillary extractions of the first premolars on the left side and the second premolars on the right side. We would then move the mandible and maxilla back and the chin forward. The procedures are maxillary-mandibular

ostectomies and osteotomies and a genioplasty. So basically that's what we did. We put him into maxillary fixation with an occlusal wafer.

We'll keep him in the hospital three days and then release him. We'll have him back quite often to check on his progress. We'll also be keeping records, including radiographs and photographs, to follow up on the case and also for future use in research projects.

Mr. Fonseca will follow this case, among many others, during the four years he will be in Dr. Walker's program. He will see the patient more frequently at first to make certain the healing process is successful and also to make sure that the fixation is stable.

Reflecting on the excitement of the moment, Mr. Fonseca made these comments.

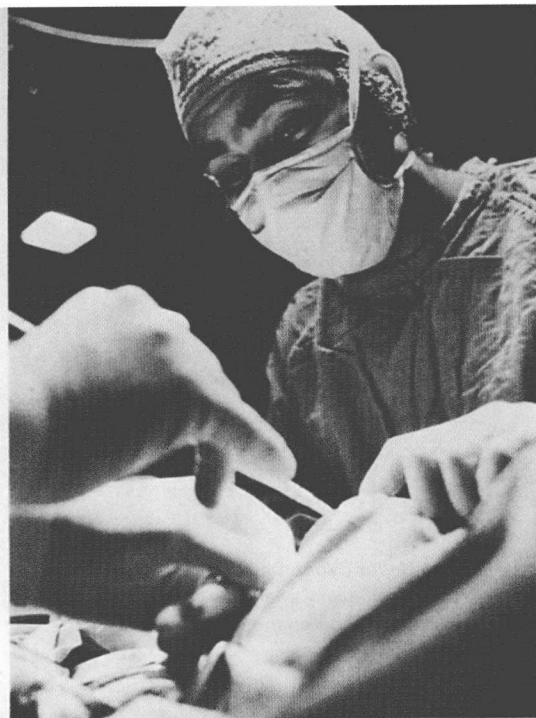
I am really thrilled about reconstructive surgery. It's a chance to see a change right before your eyes. A man like Dr. Bell has documented the stability of these procedures, many of them, and will be doing more, and I will be doing research with him along with John Dann.

We have pictures of people needing this surgical correction to show how they appear before surgery, and they look very disheveled. They have buck teeth or their chins are way back, and it affects their personalities. But when they come back after two or three months they're all nicely dressed.

When we show people the before-and-after photos, they ask us if we told the patients to dress up for the "after" photo. We never tell them anything. They don't know their pictures are going to be taken. But their personalities have changed. It's incredible, and I just get a big kick out of this.

■ *Fonseca's research projects:* Since the first of the year, Mr. Fonseca has been working on several research projects with Dr. Bell. One is a sagittal split study based on surgery on rhesus monkeys. They are documenting angiographic studies on the healing of monkeys after surgery and the redistribution of the blood supply after a sagittal split, as well as other variables. About 20 sagittal splits are performed each year throughout the three services at Parkland, John Peter Smith, and the Veterans Administration Hospital in Dallas. Mr. Fonseca commented that they will also be doing a clinical sagittal split study of their patients.

■ *Dann's research:* Mr. Dann, who is now back on the surgical service, broke fresh ground with his initial research project, which he completed earlier this year. The project's title is "Long-Term Analysis of Stability of Segmental



Close-up of Raymond Fonseca in reconstructive surgery at Parkland Memorial Hospital, Dallas. Mr. Fonseca was one of the first recipients of AFDE's dental scholarships for undergraduate disadvantaged minority students.

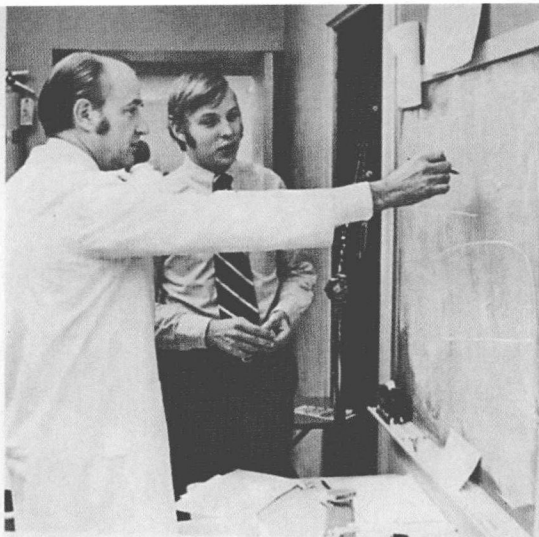
Alveolar Surgery and Genioplasty and Analysis of the Associated Soft Tissue Chambers." He has used this research project as the basis for a thesis he has submitted to Harvard.

In this project I have tried to come up with an indicator for the surgeon so he can operate with greater accuracy in this type of surgery. It is hoped that this study will tell the surgeon such things as: If you want to move the teeth in an inch, that means the upper part of the chin is going to come in this far. Or, if you want to build a chin for an individual, you slide the jaw up this far, and this is where the chin will be.

All of my data have been computerized to make the study as accurate as possible.

Orthognathic surgery, which is what this is, is relatively new in this country, and this is one of the centers where they are doing a sufficient number of cases so you can make a fairly extensive study of the results.

There's always a big question when you start doing a new surgical technique. The results may look fine initially, but you may not be sure exactly what you have done then or what the results will look like five years later. In other words, how stable has the procedure been? This is the question I have tried to answer in my research project.



Dr. William H. Bell and John Dann discuss problem in quantitatively analyzing the stability and soft tissue changes associated with maxillary surgery.

■ *Dann's surgery experience:* One of the most memorable surgical experiences Mr. Dann has had thus far involved a 40-year-old man who had been in a serious automobile accident. He had bilateral Le Fort I, II, and III fractures, and his mandible was fractured in five places. Mr. Dann discussed the case.

His whole facial skeleton was disattached from his skull. We got called in on a Sunday evening, and the procedure lasted 16 hours. The problem with this type of case, especially with the mandible in so many pieces, is that you have very few guidelines as to how to put the patient's face back together. It was almost like sewing up the sides of a basketball.

But we were very pleased with the results. We've seen this man several times since and he looks good. He has practically no scars except where part of his chin was ripped off his face.

Structure of oral surgery program

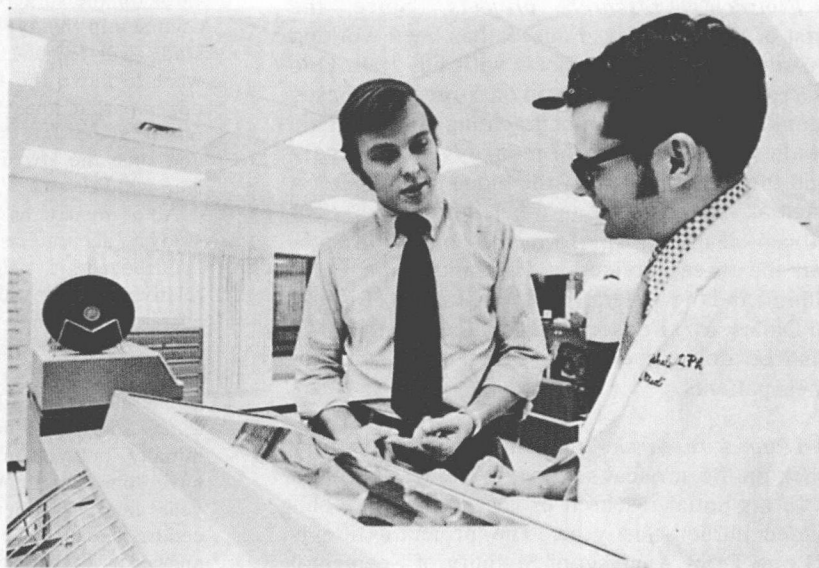
When Dr. Walker came to Southwestern in 1954 as a resident in oral surgery, there was no full-time head of the program or even a division of oral surgery.

Through service in the Korean War, he had become highly competent in managing maxillo-facial injuries, and this soon came to the attention of the chief of surgery at the time, Dr. Ben Wilson. Before Dr. Walker completed his residency, Dr. Wilson invited him to join the full-time faculty at the medical school and create a full division of oral surgery within the department of surgery. This was in 1956.

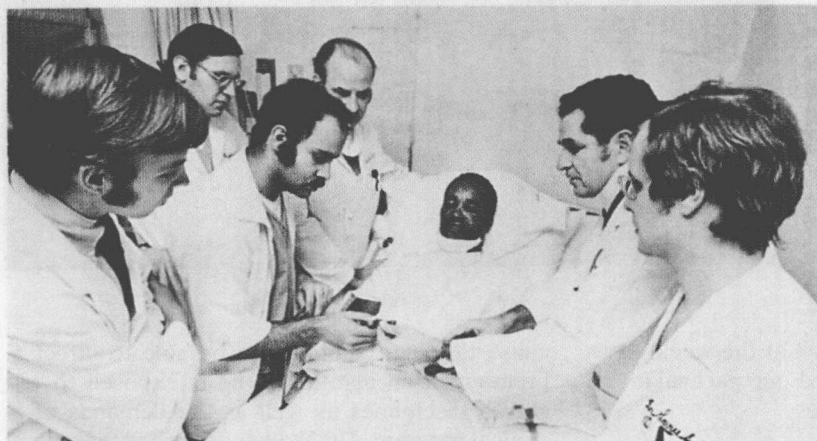
Dr. Walker recalled his initial reaction: "I was absolutely staggered. I really wondered what the place of oral surgery was in a medical school. But I decided to give it a whirl."

In the beginning he relied heavily on Thoma's textbooks on oral surgery, which he referred to constantly whenever a problem arose. Dr. Walker said, "It's surprising what vision and what a wide scope this man had. The program was really designed and arranged around what this man was doing or had done. That's how we started."

He also patterned his program after existing



Resident John Dann and David Mischelevich, director of the medical computer resources center, review computer needs for research project on stability of segmental alveolar surgery and genioplasty.



Raymond Fonseca and Dr. Walker examine patient's nail beds for clinical signs of excessive blood loss.

programs in the medical school. "We had research. We had our very busy clinic. And we had our surgical schedule. At first we only had half a day each week in surgery; now we have three full days a week elective time. That had to come slowly, but we've been very aggressive in terms of scheduling patients. We are accepted fully as an integral part of the hospital surgical staff, and our relations are absolutely superb here."

His initial objective was to produce highly competent oral surgeons to help fill a void that existed then in many cities in the Southwest. Now his overall objective is twofold: to produce top-flight oral surgeons and men who can eventually head oral surgery programs in major institutions throughout the country. To accomplish these objectives, Dr. Walker has evolved a philosophy that is firmly tied to his program.

■ *Importance of staff:* First and foremost, Dr. Walker believes in the importance of a full-time staff. He has four full-time people now. Dr. Bell directs the research activities of the program. Dr. Bruce N. Epker is full-time director of the program at John Peter Smith Hospital. Dr. D. Gary Wolford, who trained under Dr. Walker, heads the oral surgery program at the Veterans Administration Hospital in Dallas. The fourth full-time staff member is Dr. Jose P. Ampil, a maxillofacial prosthodontist.

Commenting on his staff, Dr. Walker said, "I think the key item in our program is full-time people who have only one purpose for their presence and that's the teaching of advanced education in oral surgery."

In fulfilling this commitment, the staff gives trainees in the program as much responsibility

as they can handle. This is also basic to Dr. Walker's philosophy. He said:

When a trainee has had enormous responsibilities in a lot of different areas in the scope of oral surgery—decision-making, scheduling, performing very sophisticated surgery—he is less apt to narrow his professional scope when he leaves the program than he would be if he were oversupervised. It also builds confidence. Responsibilities are given to them for that reason, more than they like sometimes, but we feel it is absolutely essential for our trainees."

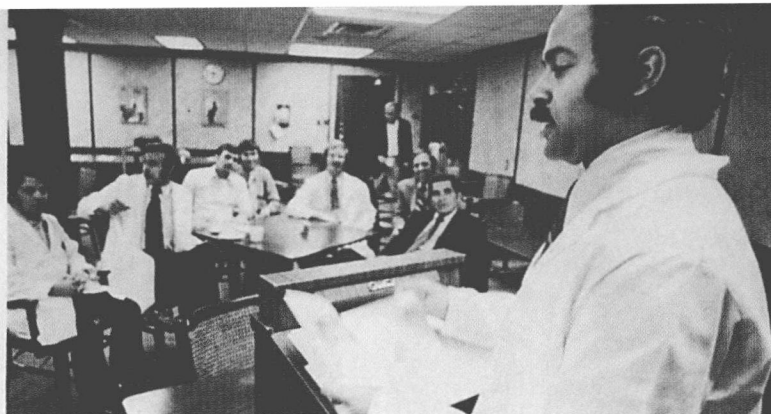
Effective communication, both verbal and written, is also essential to the program's objectives. Dr. Walker commented, "One of the biggest deficiencies we find in our people is that they are not forensically able, nor can they write well. This is a reflection of education far earlier than we can provide it."

Dr. Walker's trainees are encouraged to prepare formal papers suitable for publication, either individually or in collaboration with other members of the program. In this way they can begin to learn the art of scientific writing and also make contributions to the scope of knowledge in oral surgery.

■ *Conferences and literature reviews for residents:* The program includes a series of Wednesday and Saturday conferences throughout the year. Six major areas are covered: physical diagnosis, maxillofacial trauma, maxillofacial orthopedic reconstruction, surgical pathology, essentials of patient care, and myofascial and odontogenic considerations. Guest lecturers are often invited to the conferences.

A Journal Club program gives every trainee frequent opportunity to review the current oral

Bonegraft and continuity defects were discussed by Raymond Fonseca at a recent session of the Journal Club.



surgery literature and to discuss it at the weekly meetings. Mr. Fonseca described one particular study in which he was involved.

One of my Journal studies was on bone graft and continuity defects. I looked through more than 80 articles on bone grafting in recent and pertinent literature before the meeting. From these 80 articles I selected 20 that were the most relevant and the best done and presented them at the meeting.

I criticized them constructively, agreeing with some things and disagreeing with others. Then everybody at the meeting, including Dr. Walker, his staff, and the other residents, joined in the discussion. These are very informal meetings, really. That's where we pick up what's being done in oral surgery, at these Journal Club meetings and the weekly conferences.

■ *Research comes early:* Dr. Walker believes in beginning the program with research as well as surgical experience; therefore, in the first two years of the program, his residents complete one year of research and one year on the surgical service.

The advantage of beginning with research is that the boy still has the carrot before him. He can fulfill his research requirements knowing that he still has two full years of surgery to come. This helps him to settle down in a more disciplined way in the laboratory. You can't mix the two together very well if you have a busy clinical service. You can't do part clinical and part research at the same time, so we keep these experiences separated.

Extent of surgical experience

Dr. Walker's primary objective is to produce a man who will be competent in managing the many problems attendant to the practice of oral surgery. Dr. Walker describes him as "an unflappable person who will be able to manage the most excruciating problems under almost any circumstances in a hospital or in an office." Be-

cause this man should also be able to direct a program in an institution, he is exposed to research disciplines as well as the demands of a clinical program. Dr. Walker described the extent of surgical training that a man will have at the end of his residency.

"He will be able to take care of the usual dental-alveolar surgery, which includes extractions, soft tissue surgery within the oral cavity, removal of impactions, preparation of ridges for prosthetics, and the usual intraoral procedures attendant to oral surgery," Dr. Walker said. "In addition, he's going to be able to take care of almost any type of maxillofacial injury in terms of bone injury, from the frontal bone down to the mandible."

Since 1956 the division of oral surgery has been responsible for the care of maxillofacial injuries, and it still has primary responsibility for the management of these injuries.

A resident in Dr. Walker's program will be able to take care of the usual odontogenic lesions that occur about the maxilla or the mandible, the benign tumors that occur in and about the oral cavity. He's a participant in the care of cancer patients—especially the reconstructive phase of it. Dr. Walker remarked, "This is one facet of the program that he's directly involved in at John Peter Smith Hospital. Under the direction of Dr. Bruce Epker he will have primary responsibility for caring for many of the malignancies that occur about the oral cavity. This is not to say that we are teaching this at all. But at least the young man has exposure to it."

The resident will be quite capable in orthognathic surgery. According to Dr. Walker, during the past 12 years there has been an enormous thrust forward in the care of patients with dental-alveolar plus skeletal deformities. These patients have severe orthodontic problems. The resident will be able to diagnose precisely where the deformity lies—whether it's within the dental al-



Dr. Stuart N. Kline, professor of oral surgery, University of Miami, Fla, School of Medicine, lectured on the use of bone grafts in managing deformities of the mandible at a recent Saturday morning conference.

veola, or in the skeletal area where the bone has to be manipulated to produce a better appearance.

"He will have a great capability in the care of many temporomandibular joint problems," Dr. Walker commented, "including intricate surgery in and about the temporomandibular joint and the usual infections of odontogenic origin. The young man will have great competence in the incision and drainage of the facial planes in and about the floor of the mouth. He will be able to manage a wide range of lesions that originate in the salivary gland and in the maxillary gland area."

He will also have extensive experience in pre-prosthetic surgery, involving the extensions of the vestibules, the lowering of the floor of the mouth, and skin grafting in the oral cavity to produce better ridges for the prosthodontist to work with in producing dentures.

Dr. Walker added, "He'll be quite capable in reconstruction from the standpoint of bone grafting, where there are defects of the jaws,

either of congenital or acquired origin, for example, as a result of tumor surgery or secondary to infection. There are many defects of the face and jaws that require bone grafting."

Rotations in allied areas

■ *Required rotations:* Dr. Walker's program includes three required rotations. All trainees participate in the general anesthesia service at Parkland for four months. They spend three months on the internal medicine service at John Peter Smith and two months on pathology at the Dallas Veterans Administration Hospital. All of these rotations include daily afternoon lectures.

We want our trainees to be well-disciplined in the specialty of anesthesia. We give them full responsibility, and in this way they learn an enormous amount of cardio-pulmonary physiology, pharmacology, and resuscitation.

How in heaven's name do you resuscitate a patient who's had a cardiac arrest or get a tube into a patient if his airway is obstructed after an accident? Those are some of the reasons I want our trainees to have a thorough exposure to anesthesia, because these are some of the things they are going to have to do."

The internal medicine rotation is taken at John Peter Smith Hospital, which is oriented to the general practitioner in medicine. Here the resident becomes familiar with patients who have metabolic and medical diseases. The service is so structured that Dr. Walker's residents are given full responsibility for care. Dr. Walker said, "It's actually like a medical residency. They learn a great deal in this tenure in terms of taking care of sick patients."

During the rotation in pathology the resident learns the histology of lesions of the oral cavity. He learns how to recognize lesions from a clinical, radiographic, and histopathologic standpoint, especially lesions that are unique to the oral cavity. The resident not only becomes familiar with odontogenic lesions but with lesions of salivary gland or mucosal origin.

■ *Elective rotations:* In addition, residents also have an elective rotation that they can take in their last year in the program. They may elect to participate in the rotation on otolaryngology or on plastic surgery to learn some of the dis-

ciplines that are part of those particular services. Or they may opt for the rotation in the infectious disease service at Parkland, which is one of the busiest services, so they can learn more about the microbiology of disease and antibiotics. Some residents have elected the cardiology service at Methodist Hospital, an affiliate of the medical school. Whatever their interests, opportunities for intensive learning experiences are available in almost every medical specialty.

Dr. Walker's program includes 12 months of research, 12 months on required and elective rotations, and 24 months of clinical experience at the three affiliated teaching hospitals. His residents also participate in pediatric oral surgery at Children's Medical Center which is adjacent to Parkland. In all, his residents participate in approximately 1,500 elective and emergency surgical cases each year at all four hospitals.

Responsibilities of the senior resident

In each year of the program three or four senior residents spend at least three months as chief residents at all three oral surgery services. This is the program's final "maturing process" for residents. Each chief resident is administratively in charge of that particular service. Dr. Walker explained that the chief residents are directly responsible for the performance of the first- and second-year men. "If a trainee is not performing well, the chief resident has got to tell me why. He's my direct line of communication to the program. It doesn't mean that we're not counseling and talking to every man in the program, but the one who has to face the buck when things are not going well is the chief resident."

The chief resident in Dr. Walker's program decides which trainee is going to handle emergency trauma cases. He also has responsibility for the monthly schedule of call so that the oral surgery service is covered day and night at all three hospitals.

"There are almost 200,000 emergency admis-

sions at Parkland alone each year," Dr. Walker remarked. "There's hardly a night when our people are not involved with patients. It may be someone with an abscessed tooth that needs to be incised and drained. It may be a patient with severe facial injuries from an auto accident. It could be any number of things."

Each trainee is provided with a booklet that describes the protocol of the program and each resident's responsibilities. But the assignments of the year for the Journal Club, the weekly conferences, the medical rotations, and the clinical service are made by third-year residents who will be the chief residents during the next year. Their decisions are reviewed and discussed with Dr. Walker and his staff before final approval is given.

Results of the program

Reflecting on the results of the program, its philosophy, and its major objectives, Dr. Walker believes that his goals are being accomplished. He referred to a report he prepared during the past year for an evaluation by the ADA Council on Dental Education. Of the nine men who completed their training during the past three years, four are in private practice and five are in institutions. This includes Dr. Wolford who heads the oral surgery program at Dallas Veterans Administration Hospital, and full-time staff members at the University of Connecticut in Hartford, the University of Florida in Gainesville, the University of Washington in Seattle, and University Hospitals in Jacksonville, Florida. More than half elected to go into institutions rather than private practice.

Dr. Walker's approach to advanced education in oral surgery is innovative and progressive in many respects. His emphasis on developing highly competent oral surgeons who will have the maturity and ability to head oral surgery programs of their own represents a major contribution to the specialty.

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