Jaw wiring: Tough anti-obesity weapon

Medical approaches to helping extremely obese patients lose weight—agents to increase diet bulk, suppress appetite and induce malabsorption—are not particularly successful. Intestinal bypass surgery may be more effective, but it can physically harm if not kill patients. Now experience with a treatment that approaches intestinal bypass surgery in effectiveness but is safer and much cheaper is reported in the June 11 LANCET by a medical group at the Royal Adelaide Hospital, the University of Adelaide, the Institute of Medical and Veterinary Science and Flinders Medical Center in Adelaide, Australia. The technique is jaw wiring.

The study by S. Rogers and his colleagues included 17 patients with severe obesity: They weighed twice what they should have. All had resisted medical treatment for 1 to 10 years. Psychological problems were common, including bouts of severe depression among 14 patients and attempted suicide among 3. Before jaw wiring, each patient had a medical checkup. A psychiatrist excluded psychotic illness, and an oral surgeon assessed the suitability of the patient for jaw wiring. If the patient had nasal airway obstruction or jaw damage, he was not wired. Cavities and gum disease were treated before wiring.

Jaw wiring was conducted on an outpatient basis. Each patient was placed under a local anesthetic. Two interdental eyelets were placed in each canine and premolar region of the patient's mouth, and the eyelets on opposing jaws were wired together. The patient was instructed in oral hygiene and in how to vomit without choking and was then discharged on a fluid 800-calorie diet of milk, tomato juice and unsweetened fruit juice, with unlimited low-calorie fluid and daily multivitamin supplements. The patient was seen every two weeks for a medical assessment and every six weeks by the dental surgeon.

Jaw wiring was largely satisfactory, Rogers and his co-workers report. Patients rated the discomfort as no worse than a tooth extraction, resumed their normal activities the next day and could speak normally after two days. Wire replacement was necessary in six patients because of damage caused by sneezing or coughing and in one because of discomfort. None of the patients developed serious tooth decay or gum disease, and only two patients had transient gum soreness. After wire removal, 10 patients noted some limitation of jaw movement, and two of them required some physiotherapy.

Although all the patients found their diet monotonous, none complained of the hunger, fatigue and light-headedness common with low-calorie regimens. Nine of the patients, however, did admit to occasional cheating by squeezing high-calorie fluids or foods between their teeth. Also five patients had their wires removed after a few weeks or months because of loss of enthusiasm and missed appointments or because of the need for anesthesia, shingles or temporary hair loss. Still, seven others remained wired from 5 to 12 months, and five others were still wired by the time the study ended. All of them lost weight at a rate comparable to that of bypass surgery—a median loss of 72 pounds—over a six-month period. One patient even achieved her ideal weight.

Thus jaw wiring appears to be fairly well tolerated by patients and is as effective as, but safer than, intestinal bypass surgery for the extremely obese. The major risk—choking—is minimized by correct posturing during vomiting. Jaw wiring is also much cheaper than bypass surgery because it can be done on an outpatient basis in any hospital that treats jaw injuries. The investigators admit, of course, that the technique is not the final answer to keeping the obese from eating. Although the patient who reached her ideal weight did keep it after being unwired, and two others remained stabilized or even lost more weight, six others who were followed up regained some weight.

"Jaw wiring," the investigators conclude, "must be regarded only as a method of inducing weight loss, and the patient's eating behavior must be modified if permanent success is to be achieved." □

Time dilatation: Precise confirmation

The special relativistic law of time dilatation is one of the most important curiosa of the Einsteinian world view. The basis of the famous clock and twin paradoxes, which frustrate physics students and puzzle the readers of popular books, it states that if an object is moving fast, time will go slower for it than it does for the same object traveling slow. A recent experiment at the CERN laboratory in Geneva has exhibited the correctness of the time dilatation formula to a higher accuracy than ever before.

The experiment that measured the muon magnetic moment (SN: 6/4/77, p. 357) measured the lifetimes of muons going so fast that they lived more than 60 microseconds. Using the special relativity formula, the experimenters then calculated the lifetime of a static muon to be 2.1948 microseconds, a figure that agrees with measurements of static neutrons to within 0.2 percent. It had been suggested that the time dilatation law might run into trouble in processes involving very small distances. This experiment indicates that, if that is true, those distances must be less than a hundredth of a fermi, or less than 10^{-15} centimeters. □

Space shuttle: Tests trimmed but delayed

The space shuttle, designed as an earth-to-orbit "truck" for future space missions, is now scheduled to be flown on its own for the first time on Aug. 12. On that date, if all goes well, it will glide to a landing in the Mojave Desert after being released in midair from the 747 jet that has carried it piggyback in seven "captive" test flights so far. National Aeronautics and Space Administration officials, meanwhile, will be hard at work trying to pick 30 to 40 shuttle astronaut candidates from among more than 5,500 applications that had arrived by the time the deadline passed on June 30.

The planned date for the first shuttle "free flight" is the result of a test series that has combined remarkable successes in major objectives with a variety of lesser technical malfunctions. The first group of tests, in which the shuttle was carried unmanned atop the 747 to evaluate basic aerodynamics and the safety of the piggyback arrangement, went well enough that it was cut from six flights to five. The first manned tests, held on June 18 with astronauts Fred W. Haise Jr. and C. Gordon Fullerton aboard to check out control systems and movable surfaces, followed two days of delays including malfunctions in one of the craft's three inertial measuring units and two of the four primary flight-control computers. The flight was also conducted despite a known small leak in the shuttle's auxiliary power unit.

The second manned captive flight, with astronauts Joe H. Engle and Richard H. Truly aboard, was held on June 28. It too was deemed successful in its major goals—the number of remaining captive tests is being cut from two to one as a result—but after the flight the power-unit leak was found to be large enough that it was decided to remove the unit from the shuttlecraft for repairs. With the power unit grounded, program officials decided to extend the time and use it for additional modifications that originally were to have been made between the final captive flight and the first drop test.

As a result, the remaining captive flight is scheduled for July 28, a full month after the previous one, with the drop test to follow two weeks later. The craft is expected to go into orbit for the first time in March of 1979, with additional orbital test flights targeted for July, September and December of 1979 and February and March of 1980.

None of the new astronauts now being selected by NASA will take part in those first six orbital missions. To be chosen by Dec. 31 of this year, the "rookies" will report to the NASA Johnson Space Center in Houston next July for two years of training, leading to orbital flights beginning in July 1980, while the present astronaut corps handles the tests. □