Easing out radical mastectomies

A National Cancer Institute panel of breast cancer authorities made a recommendation last week that should be welcomed by women in the United States: Modified radical mastectomy should replace radical mastectomy as the choice of surgery for early breast cancer and even for some breast cancers that have spread to underarm lymph nodes.

Because a radical mastectomy consists of removal of the muscles of the chest, as well as of the cancerous breast and underarm lymph nodes, it is a disabling and disfiguring operation. Yet it has been standard treatment for early breast cancer for half a century because physicians thought it was the only way to keep cancer from spreading to other areas of the body. A growing body of evidence, however, shows that radicals are not necessary to assure the survival of patients. The evidence comes from a study being conducted at 35 U.S. medical centers and headed by Bernard Fisher of the University of Pittsburgh. Fisher and his co-workers have been following the progress (for an average of 70 months) of 1,680 women who either underwent radical mastectomies or who had a simple breast removal.

Fisher reported to the NCI panel that of those women whose cancer had not spread to the underarm lymph nodes and who had undergone a radical, 73.5 percent are today free from cancer, whereas of those women whose cancer had not spread to the underarm lymph nodes and who had undergone a simple breast removal combined with radiation treatments, 73.6 percent are today cancer-free. And as for those women in whom breast cancer had spread to the lymph nodes and who had had a radical, 57.9 percent are today free from cancer. Of those women who had cancer that had spread to the lymph nodes and had a simple breast removal plus radiation, 55.4 percent are today disease-free.

The NCI panel concurred that a modified radical mastectomy (removal of the breast and some underarm lymph nodes), rather than a radical mastectomy, should be the surgery of choice for cancer at a single site in the breast, and that it should even be surgery of choice for select patients whose breast cancer has already spread to underarm lymph nodes.

But even better news may greet women several years from now, according to results of an Italian study presented last week to the NCI panel — a recommendation away from a modified radical mastectomy to a partial breast removal, provided the cancer is diagnosed before it spreads beyond the breast and is small. During the past five years Umberto Veronesi, director of Italy's National Cancer Institute in Milan, has been following the progress of 150 breast cancer patients whose cancers were diagnosed before they spread to other areas of the body and whose cancers were small. Half of these patients had a cancerous breast removed, and one-half had only the cancerous parts of their breasts removed. All of the patients underwent biopsies of their underarm lymph nodes after surgery to make sure that the cancer wasn't spreading. If it had spread, further treatment was applied. Now, five years later, there is a survival rate of 90 percent in both groups. So the NCI panel concurred that partial removal of a cancerous breast looks promising and may even eventually replace a modified radical mastectomy as the surgery of choice.

How are U.S. surgeons reacting to these data? Many have already abandoned radical mastectomies in favor of less drastic surgery. Others have been waiting for five-year results such as the above and for recommendations from authorities before switching. Currently in the United States radicals are being performed on about 25,000 breast cancer patients each year, or on about one out of six women with early breast cancer. □

Two, two — two quasars in one

Since scientists first measured the deflection of a star's light during a solar eclipse in 1919, gravity's ability to bend light (an effect predicted by Einstein's theory of general relativity) has been confirmed many times. What had not been observed was the more extreme case — deflection of light by a gravitational field so strong that it acts as a lens if on the line of sight. But now astronomers believe they have found the first evidence for just such a gravitational lens.

Dennis Walsh of the Jodrell Bank Radio Astronomy Observatory, Robert F. Carswell of Cambridge University's Institute of Astronomy and Ray J. Weymann of the University of Arizona's Steward Observatory report in the May 31 NATURE that they have detected, at the edge of the visible universe, twin quasars so identical that they may be the same object whose image has been split by the gravitational lens effect caused by a massive object, such as a galaxy, located between the quasar and the earth.

On March 29, a pair of blue stellar objects, designated 0957+561 A and B in accordance with their position in the sky, were observed using the intensified image dissector scanner at the 2.1-meter telescope of the Kitt Peak National Observatory. After 20-minute scans on each object, it was determined that both were quasistellar objects with almost identical spectra and redshifts. Within the limits of their observational error, key emission and absorption lines in each object's spectrum matched in both wavelength and width.

The title of the paper — "0957+561 A, B: twin quasistellar objects or gravitational lens?" — suggests that the three astronomers did consider a more conventional explanation for the double quasar effect. But they conclude that the weight of evidence is in favor of the lens. "The great similarity in the spectral characteristics of these two QSO's which have the same redshift and which are separated by only 6 arc s[econds] seems to constitute overwhelming evidence that the two are physically associated...." A number of coincidences were needed to explain how two separate quasars, receding at the same speed and thus located at the same distance, could have evolved with identical spectra. Most quasars have very different spectra. The difficulties are overcome by the gravitational lens hypothesis.

According to the theory, a gravitational lens effect occurs when a gravity source, billions of times more massive than the sun, bends light from a more distant source. The closer the light is to the central source of gravity, the more the deflection (the opposite of a glass lens in which there is no deflection through the center). If the massive object is directly in the line of sight, the light would appear for the observer to be spread into a ring. A slight misalignment would produce two separate images, the effect believed to be occurring in the present case. The strong gravitational source responsible for the light deflection producing the two quasar images was not observed at Kitt Peak, but Walsh, Carswell and Weymann report that it could be a massive galaxy far enough away to be unobservable.

The twin quasars were further observed in late April by Smithsonian Astrophysical Observatory astronomers Frederic Chaffee, Nathaniel Carleton and Marc Davis using the new Multiple Mirror Telescope at Mount Hopkins. The NATURE report notes that these additional observations "strengthen the case for a gravitational lens." An editorial comment by F.G. Smith, director of the Royal Greenwich Observatory, in that same issue of NATURE says that "they completely confirm the identity of the spectra." Smith adds, "The present observations show only that both twins are point-objects, but higher angular resolution may conceivably show some elongation which would elucidate the actual geometry."

To shed more light on the lens hypothesis, it is suggested that the variable brightness of each quasar image be studied. The light curves should have the same pattern if they originate from a single source. Since each image followed a different path in space, however, the patterns could lag one another by months or even years.

In their conclusions, Walsh, Carswell, and Weymann note that further work in determining the radio structure of the twin quasars would also be of great value. □