A chronically implantable radiofrequency (rf) probe for producing lesions and the related surgical technique have been developed and adopted for use in the treatment of some patients with severe movement disorders. The probe has been found to be very reliable when used for the production of both single and multiple incremental lesions with the rf instrument of Van den Berg and Van Manen.

It is the purpose of this note to describe the specifications for this probe and its cranial retaining device, and to outline the procedures for introducing the probe into the brain.

**Apparatus**

Figure 1 shows a diagram of the rf lesion probe and the retainer assembly used to fix the probe with respect to a target and the skull. The probe itself consists in part of a shaft made of 23-gauge stainless steel tubing. A hollow cylindrical "lesioning tip," 1.5 X 4 mm, slightly rounded, of type 304 stainless steel, is welded to the shaft. A thermocouple is formed of constantan to stainless steel inside the "lesioning tip" for temperature monitoring. A coating of epoxylite and a layer of shrinkable Teflon or Kynar tubing are used to insulate the electrode shaft.

Connecting leads are attached to the electrode shaft and to the thermocouple wire and are then passed through a Delran cap fixed to the outer end of the shaft. The cap is filled with acrylic cement to protect the junction between the leads and the probe. The completed electrode is shown in Fig. 2.

In addition to the probe itself, Fig. 1 shows the retainer assembly used with the rf electrode. This assembly consists first of a self-tapping screw guide made of type 316 stainless steel. This guide serves to fix the probe with respect to the skull and maintain its orientation relative to the intracranial target.

The next element in the assembly is a Silastic compression washer that expands into the slightly conical center of the guide body to form a primary seal. Next in the sequence is a compression nut that consists of a nylon bushing with two stainless-steel locking screws. The compression nut is threaded to join the body of the screw guide. This completes the seal by expanding the washer and further stabilizes the probe when the locking screws are tightened.

**Technique**

At the time of implantation of the probe, the patient's head is fixed in a Todd-Wells stereotaxic instrument. After radiologically visualizing the ventricular system, the cerebral structures of interest are located and a drill opening is made in the cranium at an angle coincident with the target. The electrode body guide (Fig. 1) is attached to the
Fig. 1. The rf lesion probe and retainer assembly.

Fig. 2. Completed rf lesion probe.