tional human evidence that, in normal patients deeply
anesthetized with halothane, succinylcholine routinely
increases jaw muscle tone.4

With this information in mind, I believe that the clinici-
ian should now regard trismus in a different light. In
the situation described in these two retrospective stud-
ies, i.e., pediatric use of halothane and succinylcholine,
trismus obviously does not herald the onset of mali-
gnant hyperthermia 50% of the time. Thus, our philoso-
phy in regard to management of such patients should
change. It seems warranted that, when trismus occurs
after such an induction, the case need not be stopped
immediately. There should be judicious monitoring of
end-expired CO2, venous and perhaps arterial blood
gases, blood pressure, pulse, temperature, urine color,
and muscle tone. Should these be stable, the procedure
may be continued. Should any changes occur suggest-
ing an abnormal metabolic response, then the case
should be halted if at all possible and treatment insti-
tute for malignant hyperthermia. However, to pro-
perly evaluate these cases of trismus, it is desirable that
these patients undergo muscle biopsy and contracture
responses. This will enable us to eventually determine
the true relevance of this response. In addition, values
for creatine phosphokinase should be determined to ex-
amine whether a greater-than-normal increase oc-
curred.

This proposed management of trismus is a radical
departure from prior philosophy, and may be contro-
versial in regard to medical-legal questions. If the clini-
cian wishes to be more conservative, then he or she
should follow Dr. Rosenberg’s advice, and not attempt
to change his or her approach. The ability to answer
this question concerning trismus may be progressively
evaporating as the use of succinylcholine is replaced by
newer non-depolarizing muscle relaxants. In fact, this is
the course that Dr. Rosenberg and others5 suggest, as
they recommend that the use of succinylcholine should
now be reserved for specific indications.

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In Reply:—Dr. Gronert proposes that patients who
experience trismus after succinylcholine need not have
anesthesia stopped and surgery rescheduled. Instead,
anesthesia may be continued with non-triggering agents
and sufficient monitoring to ensure that, should mali-
gnant hyperthermia develop, it would be detected and
treated early. Indeed, others also espouse this recom-
menation.1 I do not. My reasons are as follows:

End expired CO2 monitoring, the most sensitive
means of detecting malignant hyperthermia, is not
available in all operating rooms, and, if it is, the monitor
requires time for calibration (during which time the pa-
tient would be anesthetized). Insertion of arterial (and
venous?) catheters is time consuming and detracts from
close patient observation.

However, my major objection is that malignant hy-
perthermia may occur immediately after trismus,
but may occur sometime during the operative pro-
dure. Now the surgeon would have to be told to abort
the operative procedure, perhaps at an inconvenient
time, or rush through the surgery. Dantrolene would
then have to be secured and administered. By these
actions, we have unnecessarily increased the risks for
the patient.

Finally, patients who have experienced trismus with-
out any other sign of malignant hyperthermia may ex-
perience significant muscle destruction, myoglobin-
enia, and myoglobinuria. If myoglobinuria is not rec-
ognized and treated, then it is possible that
myoglobinuric renal failure may ensue. There is no in-
formation to indicate if continuing the anesthetic with a
non-triggering technique would worsen such muscle de-
struction; I think it might.

Certainly, for an elective procedure, I believe that the
additional problems that might be engendered by con-
tinuing the anesthetic are simply not justified. There-
fore, I advise practitioners that, following trismus in a
patient having an elective procedure, surgery should be

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rescheduled, and the patient evaluated by muscle biopsy. If the surgery is life-saving or emergent, then I recommend intravenous ceftriaxone along with switching to non-triggering anesthetics and appropriate invasive monitoring.

The problem of the coincidence of trismus with malignant hyperthermia is discussed further in my editorial, and I certainly agree with Dr. Gronert's recommendation that, after trismus, patients should undergo muscle biopsy.

Although many agree that succinylcholine is a drug whose complications are so numerous that it should be used on indication only, nevertheless, succinylcholine is still used extensively in anesthesia practice. It will take many years for the new non-depolarizing relaxants to supplant succinylcholine. Therefore, I think we are going to be faced with trismus after succinylcholine for many years to come.

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Another Use for Swivel Adaptors

To the Editor.—Heart and breath sounds are monitored with a stethoscope either placed externally on the precordium or internally in the mid-esophagus through the oro/nasopharynx. The heart beat and the breath sounds heard with the internally placed esophageal stethoscope are loud and clear because it is placed closer and separated by less dense tissue from the heart and the lung than with the precordial stethoscope. Placing the esophageal stethoscope in the oropharynx is possible only when anesthesia is administered via an endotracheal tube to the patient. When a face mask is used, any probe in the oropharynx coming out between the mask and the patient's face will prevent a tight fit of the mask on the patient's face, and will interfere with adequate ventilation because of leaks.

We have designed a modification of the standard mask adaptor (fig. 1) that permits insertion of an esophageal stethoscope or any other probe (temperature, fiberoptic bronchoscope, suction catheter, or N-G tube) into the oropharynx when a face mask is being used without loss of the airtight fit of the anesthetic system. The modification consists of a swivel adaptor (Portex®)

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**Fig. 1.** *Left:* The fully assembled system with the esophageal stethoscope passing through the swivel adaptor in an anesthetized patient. *Right:* The exploded view. **Portex® swivel adaptor** Fiberoptic H 625109. **Modified Jackson Rees’ circuit** (Vital Signs®) H 5102.