

## John H. Packard's Primary Ether Anesthesia

Ray J. Defalque, M.D.,\* Bernard Panning, M.D.,† Amos J. Wright, M.L.S.‡

ETHER has long been known to cause a short period of analgesia before inducing unconsciousness and surgical anesthesia. In 1794, Thomas Beddoes<sup>1</sup> had already provided relief with a short inhalation of ether for a young woman suffering from a painful mastitis John Snow also alluded to that initial analgesic stage in his 1847 book on ether.<sup>2</sup>

Deep anesthesia was rarely sought or reached in the early days of ether, and many operations were done in the agent's initial stage. The first two patients anesthetized by Morton at the Massachusetts General Hospital and several of Long's patients in Georgia inhaled ether for 3 or 4 min only, moved and groaned during their surgery, and remembered feeling the incision although they denied experiencing any pain.<sup>1,3</sup> During the first operation done under ether at the Pennsylvania University Hospital (a leg amputation) the anesthetist, Dr. James Darrach, inadvertently rendered his patient unconscious, which prompted the surgeon, Dr. George W. Norris, to yell at him "take that damned thing away, Darrach!"<sup>4</sup>

The systematic use of ether's early analgesic stage became popular in Germany after P. Sudeck<sup>5</sup> in 1901 introduced a procedure that he called "Aetherrausch." Sudeck is generally considered to be the inventor of ether analgesia. However, in 1872, 29 yr before Sudeck, John H. Packard of Philadelphia had reported an almost identical technique.<sup>6</sup> Packard called his method "first insensibility to ether" or "primary anesthesia."

### Packard's Introduction of "Primary Ether Anesthesia"

John H. Packard (fig. 1), an eminent Philadelphia surgeon, had used chloroform exclusively until 1864. Like many busy American surgeons outside of Boston, he appreciated the agent's potency, speed of action, and the intense muscular relaxation that it produced. In May 1865, he reported to the Philadelphia College of Physi-



Fig. 1. John H. Packard.

cians that after witnessing several life-threatening or fatal accidents in his own or in his colleagues' practices, he was switching to ether.<sup>7</sup> He had been encouraged to do so by his friend and ether enthusiast F.D. Lente of Cold Springs, New York. Lente had designed an inhaler to induce deep anesthesia safely, rapidly, and with a small amount of ether. In none of the 10 articles he wrote about ether, however, does Lente mention ether's early stage of analgesia. Packard reported his satisfaction with Lente's method in a second communication to the college in May 1866.<sup>8</sup>

In 1872, Packard<sup>6</sup> reported having noticed that ether initially induced a short stage of analgesia or anesthesia that he called "first insensibility from ether." He did not explain the genesis of his discovery. He gave further details on his method in a letter to the *British Medical Journal* in 1873,<sup>9</sup> two articles in the *American Journal of Medical Sciences*<sup>10,11</sup> in 1877 and 1878 and in a note in the first edition of Holmes' *System of Surgery*<sup>12</sup> (1882), of which he was chief editor. In his 1878 article,<sup>11</sup> he renamed his technique "primary ether anesthesia."

### What Was Packard's Primary Ether Anesthesia?

Packard's writings<sup>6,9-12</sup> give a clear, detailed description of his technique and his extensive experience with

\* Professor (Retired), ‡ Clinical Librarian, Department of Anesthesiology, School of Medicine, University of Alabama at Birmingham. † Professor, Department of Anesthesia, Hannover Medical School, Hannover, Germany.

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Address correspondence to Dr. Wright: Department of Anesthesiology, School of Medicine, University of Alabama at Birmingham, 619 19th Street South, JT 965, Birmingham, Alabama 35249. Address electronic mail to: ajwright@uab.edu. Reprints will not be available from the authors. Individual article reprints may be purchased through the Journal Web site, www.anesthesiology.org.

it. He used his "primary anesthesia" for brief, painful procedures such as incisions and drainages of abscesses, reductions of fractures and dislocations, cauterizations, and urological and rectal "instrumentations." Its extreme safety allowed its use in debilitated patients, in the physician's office, and even in the absence of an assistant. Dr. Packard, however, preferred to have an aide to observe the patient's reactions and to hold the inhaler, especially in children or in frightened subjects.

Packard used a cone formed of a newspaper or cardboard with an inner lining made of a thin towel or handkerchief as an inhaler. He occasionally used a simple sponge or a folded towel. He "dashed" 14.8 ml ether on the whole surface of the material to speed up its evaporation.

The patient, sitting or reclining, held the sponge, the towel, or the base of the cone against his face with one hand while keeping the other hand raised. The surgeon, ready to operate, observed the patient and urged him to breathe vigorously and to keep the hand up. Anywhere from one to several minutes later, the patient invariably dropped the hand. This sudden "loss of voluntary muscle power," according to Packard, was a reliable and consistent sign of the onset of a brief period of "absolute insensibility." The surgeon should proceed as soon as this occurred. The patient woke up within one minute, "without nausea, headache, tedious period of recovery, or other unpleasant sequels of prolonged ether anesthesia" and could be discharged home shortly thereafter. If the surgery required more time, another 11–14 ml ether could be added.

In his 1877 article,<sup>10</sup> Packard suggested that chloroform could probably induce a similar "primary anesthesia," but he left it to "less timid surgeons" to try it.

#### *Who Was John Hooker Packard?*

John H. Packard, one of the most prominent American surgeons of the last part of the 19th Century and a pioneer of modern American surgery, was born in Philadelphia in 1832. After graduating from the University of Pennsylvania Medical School in 1853, he spent 1.5 yr visiting the great Paris hospitals and another 18 months as a resident physician at the Philadelphia's University Hospital. Until his retirement in 1896, he practiced surgery in various Philadelphia hospitals and taught surgery, pathology, and anatomy at the medical school. He served as acting assistant surgeon in two Union Army hospitals during the Civil War. He founded or was an active member of many prestigious medical, surgical, and pathological societies, several of which still exist today.

In 1896, one of Dr. Packard's fingers became infected during surgery, and he developed a debilitating septicemia that forced him to retire. He died from cardiorenal failure in Atlantic City in 1907. He was 75.<sup>13–14</sup>

Among Dr. Packard's numerous publications, two popular surgical textbooks stand out: *A Manual of Minor*

*Surgery* (1863),<sup>15</sup> adopted by the US Army, and a *Handbook of Operative Surgery* (1870).<sup>16</sup> Dr. Packard was the chief editor of the first American edition of Holmes *System of Surgery* published in 1882.<sup>12</sup> Dr. Packard's defense of ether and his work on primary ether anesthesia seem to have been his only contributions to anesthesia.

#### *The Primary Ether Anesthesia after Packard*

In his 1878 article,<sup>11</sup> Packard suggested that several Philadelphia surgeons had tried his procedure. Primary ether anesthesia also became popular in some New York hospitals<sup>17,18</sup> in the late 1870s. Its administration in Dublin was reported in 1879.<sup>18</sup>

In 1901, Sudeck presented to the Hamburg Medical Association a method very similar to that of Packard that he named "Aetherrausch" (ether inebriation).<sup>5</sup> Sudeck suspected that his method was not original and in 1909, after reviewing the literature, he indeed acknowledged Packard's priority.<sup>19</sup>

Sudeck's reputation, his enthusiasm for his technique (he wrote several articles on it until 1932), and the fatalities caused by chloroform in minor surgery helped spread the use of the "Aetherrausch" in Germany where, along with the ethyl-chloride "Rausch," (Chloräthyl-rausch) it remained popular until the early 1940s. During World War II, the Wehrmacht's surgeons made extensive use of the "Rausch" for wound debridement and other minor procedures in their severely shocked wounded.<sup>20</sup> In 1911, D. Kulenkampff<sup>21</sup> had introduced ethyl-chloride "Rausch" in Germany where its potency and its speed of induction and recovery made it attractive to the busy surgeons. In 1932, however, Sudeck rightly pointed out that an anesthetic as potent as ethyl-chloride could hardly provide a true "Rausch" (a safe stage of early analgesia) but in fact induced a brief but deep anesthesia (Kurznarkose), and he strongly condemned its use.<sup>22</sup>

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