

# Siamese Twins

## The Surgery: an Agonizing Choice – Parents, Doctors, Rabbis in Dilemma

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*Reprinted with permission from The Philadelphia Inquirer (October 16, 1977)*

It was a very low-key press conference, and only half a dozen reporters had come out to hear the doctors tell how they had just separated Siamese twins.

Sitting behind a long table on the stage of a mostly empty auditorium, the doctors explained that one of the girls had died because the twins together had only one and one-half hearts. Some questions were asked, and then the conference was over – an anticlimactic ending to one of the most intense dramas ever played out at Philadelphia's world-famous Children's Hospital.

No one in the audience realized it, but the operation had probably provoked more debate, more soulsearching on the part of the staff and more concern about the law than any other surgery at Children's in recent years.

At issue was one painful fact:

The surgeons knew that in an attempt to save one of the twins they would have to kill the other.

The one-and-a-half hearts were strong enough to support only one child. Thus the doctors knew that one twin would die soon anyway, and that without the surgery this would lead to the death of her sister.

During the weeks preceding surgery:

- Several rabbis and other learned men met four to five hours every night for eleven days discussing the ethical issues. The parents, who are deeply religious Jews, refused to allow surgery without rabbinical support.
- Nurses and doctors at Children's brooded about the certain

death of one of the twins. A few refused to participate.

- Dr. C. Everett Koop, the hospital's chief of surgery, was so concerned about being prosecuted for premeditated murder that he obtained a court order for protection.

For all, it was a time of the most intense self-examination. No other surgery could more dramatically demonstrate the growing number of moral and ethical dilemmas confronting the medical profession as science extends its control over life and death.

Born only hours earlier at a distant community hospital in New Jersey, the twins looked surprisingly strong when they arrived by helicopter September 15.

They were joined at the chest, and they seemed to be hugging each other with their wizened, newborn faces only a few inches apart. Their respiration rate and their color were comparatively good, indicating that their blood was getting adequate oxygen.

But Dr. Paul Weinberg, a cardiologist summoned from home late at night, knew that something was desperately wrong the moment he looked at the twins' electrocardiogram (EKG) and listened to their chests with a stethoscope.

### **One Heartbeat**

He could hear only one heartbeat. And the EKG tracing suggested that there was only one heart.

Special X-ray studies the next day showed that the twin designated as Baby Girl B had an essentially normal, four-chamber heart that was fused to the stunted two-chamber heart of her sister, Baby Girl A.

The hearts were joined along the walls of the left ventricles, the main pumping chambers that push the blood through the body.

The connecting wall was only one-tenth of an inch thick – far too thin to be neatly divided in order to give each twin what belonged to her.

And even if this were possible, the stunted heart of Baby Girl A would not be able to support the child for long.

The doctors felt that they could not leave the babies the way they were either. They knew it would be only a matter of time before the overworked one and one-half hearts would start to fail, killing both babies. No twins joined at the heart like this had ever lived more than nine months.

But separating the twins was a job for the surgeons, not a

cardiologist.

Dr. Koop is a large man with a Lincolnesque beard and the dominating bearing of an Army general. He also has the unique qualifications to deal with the medical and ethical dilemmas posed by the twins' lethal union.

Twice before he had separated twins – a rare operation few pediatric surgeons do even once – but neither case involved a shared heart. Moreover, Dr. Koop, a Presbyterian, is a deeply religious man who has frequently spoken out nationally about the sanctity of human life.

The growing public acceptance of abortion is a source of outrage to Dr. Koop, and he is concerned about the growing trend in medicine to let, or even help, defective newborns die.

In a speech to the American Academy of Pediatrics entitled “The Slide to Auschwitz,” Dr. Koop said: “Perhaps more than the law, I fear the attitude of our profession is sanctioning infanticide and in moving inexorably down the road from abortion to infanticide, to the destruction of a child who is socially embarrassing, to you-name-it.”

It was ironic that such a man should be called upon to do this operation – an operation that would, with certainty, leave one child dead.

But as soon as he examined the twins, Dr. Koop knew that had to be done. Without waiting, he placed a call to the twins' father and arranged a meeting.

The twins had been born to a deeply religious, Orthodox Jewish family of rabbinical scholars. The father himself is a rabbinical student to whom nothing matters more – not even life itself – than God, the teaching of his religion and biblical ethics.

One axiom of biblical ethics is the infinite worth of human life.

### **A Difficult Question**

Since this ethic implies that all human life is equal – that one life is worth no more or less than another – would he consider it moral to kill Baby Girl A so that Baby Girl B could live?

This was much too difficult and important a question for the young rabbinical scholar, only in his early twenties, to try to answer on his own, so he consulted the rabbis in his community and the rabbis in his and his wife's families. Soon Rabbi Moshe Feinstein, dean of Tifereth Jerusalem seminary in New York City, was called in.

No less a man could be called upon to try to solve the dilemma

confronting the parents of the twins. So Rabbi Feinstein agreed to consider the question.

Word spread through Children's Hospital that surgeons were planning to sacrifice one of the Siamese twins.

The hospital had said little, so the rumors were sometimes inaccurate.

Mrs. Jane Barnsteiner, who is Catholic and the associate director for clinical nursing, was asked about the twins by head nurses as she went about the hospital each day on her rounds.

The Catholic nurses, of whom there are many, were particularly concerned that the surgeons might be doing something that violated the teachings of their church.

The word "sacrifice" was used so much by the nurses in discussing the matter that Mrs. Barnsteiner herself became concerned and decided to consult a priest.

At the same time, the nurses in the operating room were becoming particularly uneasy because they knew that they would be called upon to participate in the surgery, if it took place.

Winifred Betsch, assistant director of the operating room complex, was also consulted by her nurses.

Odd as it might seem, operating room nurses rarely witness death – only two or three of the 5,700 patients operated on each year at Children's Hospital die in the operating room. Medicine has developed such effective life-support systems that doctors are almost always able to get the patient at least to the intensive care unit.

So the nurses were very disturbed by the prospects of beginning surgery in which it was already known beforehand that one of the patients would be taken out of the room dead.

Miss Betsch said that she would consult a priest. A Catholic herself, she would not want to participate in the surgery if it went against her church.

The twins' father and rabbis met with Dr. Koop on September 20. And then, three days later the rabbis met again with Dr. Koop, but this time alone.

Rabbi Feinstein did not, himself, attend the conferences but instead sent his son-in-law, Rabbi M. D. Tendler, a noted Jewish authority on medical ethics, a professor of Talmudic law and chairman of the department of biology at Yeshiva University in New York.

**One or Two Lives**

Time and again Rabbi Tendler put the same question to Dr. Koop in different ways because the answer would be so important to the rabbinical discussion that would ensue.

Are the twins one baby or two babies?

If the twins were only one baby with two heads, then it would be ethical to remove Baby A as an unnecessary appendage.

If they were two babies with distinct nervous systems, however, then that would require more scholarly discussion.

Each time Rabbi Tendler asked the question in a different way, Dr. Koop would come back with the same unequivocal reply: With the exception of the chest connection at which their livers were joined, as well as their hearts, the girls were separate human beings with their own separate brains and nervous systems.

In fact, the nurses in the intensive care unit, who were quickly developing affection for the twins, could see their different personalities developing even at this early age.

Baby Girl B was much more contented and calm. Baby Girl A tended to be irritable. But they were both alert and made eye contact when someone came near.

Dr. Koop told the rabbis he felt strongly that the twins should be separated and as soon as possible because the hearts could fail at any moment.

He said, however, that he would not seek a court order to force the parents to agree, because the chances of saving both babies, even with surgery, were very slim.

Only a half-dozen times before, as far as was known, had Siamese twins been connected with their hearts fused like this. So far, none of the babies separated has survived for more than a few days.

But with surgery, there was at least a theoretical chance of saving one of them. Without surgery there was no hope at all.

It was getting late and it was Friday. The rabbis wanted to get home before sundown, the beginning of the Sabbath. So they got up and said good-by, saying they would discuss the matter and make their decision as soon as possible.

The surgeons, cardiologists and other medical people were not at all happy about the prospect of delaying surgery any longer than necessary.

It would take several days, if not weeks, to get together the complex surgical team, do the necessary preoperative tests and

make the other plans.

Concerned that the babies might take a sudden turn for the worse, Dr. Koop ordered elaborate planning for the operation, even though the parents had not agreed to it.

If the parents should say no, nothing but professional time would be lost. But if the babies' health should suddenly fail, at least the team would be ready to move immediately if the parents approved.

Dr. Henry L. Edmunds, Jr., chairman of the section on cardiothoracic surgery, was uneasy about all the unknowns in the case, and he said so when the twenty doctors and nurses assembled in the third-floor meeting room on September 30 after many informal conferences in the past several days.

When a surgeon prepares to do heart surgery, he usually has a fairly good idea at least of what the heart will look like.

But Dr. Edmunds had no idea what he would find.

Dr. Weinberg's special X-ray movies showed only parts of the heart chambers and little about how much blood was going into the heart muscle – vital information Dr. Edmunds would need before he dared tie off any blood vessels.

Because it would be too dangerous to sever the heart of Baby B from the heart fragment of Baby A, Dr. Edmunds decided to put all six chambers into Baby B's chest. Dr. Edmunds is the type of surgeon who feels uncomfortable unless he has all the facts, and in this case he faced a wealth of unknowns.

### **The Unknowns**

Would Baby B's chest be large enough to accommodate such a large heart?

What would happen when Dr. Edmunds cut the section from Baby A off from its natural circulatory system? Would it die, like a gangrenous leg without a blood supply? Or would it be nourished by Baby B's circulation through some unknown circulatory connection?

And what about the electrical conduction that caused the heart to beat? Cutting the A heart section off from its natural nervous system might cause it to beat wildly, throwing the B heart into a lethal condition called fibrillation.

Dr. Koop shared Dr. Edmunds' concern about the chest cavity being too small. Last summer he had been consulted on a similar Siamese twin case in Switzerland in which the chest appeared to have been closed too tightly to allow the six-chamber heart to beat

unimpeded. The rescued twin died shortly after surgery.

Dr. Koop told Dr. Edmunds, however, that he thought they could solve the problem by surgically building a large enough chest cavity, using the ribs of Baby A as grafts if necessary.

There were other concerns of equal importance, and they were all examined at the meeting.

Dr. Weinberg tried to describe to the doctors all that he knew about the heart from his X-rays. He used a colored, clay model he had constructed as a visual aid.

Pointing to the model, he said he thought Baby B's circulation was partly supplying the stunted heart of Baby A by passing through a hole between the ventricles where the two hearts touched. This blood from Baby B might be enough to nourish the muscles of Baby A's section of the heart, keeping it healthy. If so, this would make it possible to cut the heart off from Baby A's circulatory system and give Baby B a healthy six-chamber heart. But he could not be certain.

More X-ray studies, called angiography, in which dyes are injected directly into the heart's chambers, would be needed.

Dr. Weinberg would also find out, if possible, more about the coronary arteries feeding the one and one-half hearts. Dr. Edmunds would need to understand this clearly in case he had to graft vessels from the coronaries of the B heart to the A section to provide an extra blood supply.

Two pediatric anesthesiologists, Drs. John J. Downes and Russell Raphaely, were worried because the twins' airways were of a configuration that would make it difficult to insert anesthesia tubes.

The anesthesiologists were concerned also about the surgeons' plan to turn the babies over during surgery to get at both sides. This would make it difficult to keep the thirteen blood monitoring lines and tubes connected to the twins from getting tangled up.

The meeting ended at 5 pm.

They would need time for Dr. Weinberg to run his studies and for more planning sessions. Dr. Koop tentatively decided to do the surgery in eleven days. That would be October 11.

Eleven days would be ample time to finish the medical preparations.

But would that be enough time for the rabbinical scholars to complete their meditations?

On October 3, the intensive care unit nurse assigned to the twins noticed changes in the heart rate, respiration and electro-

cardiograph tracings to suggest that Baby Girl A might be going into heart failure.

This was an ominous sign – one that the cardiologists had been predicting would come eventually and that everyone had been dreading.

The nurse summoned the physician on duty and the decision was made to start administering digitalis, a drug used to strengthen heart activity.

Because of the strange physiology of the heart, the doctors could not be certain that the twin was in heart failure, but the signs were disturbing enough to justify the drug.

Dr. Koop was notified of the change in the twins' condition. He did not think it serious enough to put the surgical team on alert.

### **The Rabbi Calls**

Besides, he still had heard nothing from the twins' parents or the rabbinical scholars. The only contact since their meeting the week before had been a telephone call from Rabbi Tendler, who asked two somewhat odd questions.

If the surgeons wanted to, Dr. Tendler asked, could they give the six-chambered heart to Baby A instead of Baby B?

Dr. Koop could not understand why he was being asked such a question, but he told them no. The circulatory system was set up in such a way that the transfer could be made only to Baby B.

Then Rabbi Tendler asked whether Dr. Koop was certain that Baby Girl B would also die, even with the surgery.

Dr. Koop said that Baby B probably would die regardless of what was done, but that it was not a certainty.

Rabbi Tendler thanked Dr. Koop for the information, said that they hoped to make a decision shortly and then hung up without explaining the reasons for the questions or where the rabbis stood.

Dr. Koop held three meetings with the nurses and other personnel during the week to offset the growing concern about the surgery.

Many of the nurses who attended the meetings were from the operating rooms.

At each session Dr. Koop described how both babies were doomed if nothing was done and how there was a remote possibility of saving at least one if surgery was attempted.

Since Baby A was being kept alive through the extra work being



done by Baby B's heart he viewed Baby A as a burden – even a parasite – and as such it was morally right to save Baby B by removing the parasite.

The nurses were pensive at these meetings, but they did not seem outraged or disapproving, especially after Dr. Koop got through his explanation.

Most of the questions were technical rather than ethical.

Dr. Koop said they asked him what could be done if the twins started to die before surgery could begin. They also asked whether the child's chest would be normal after surgery, and whether there would be closed-circuit television to show the operation to the hospital staff, as there was in 1974, when Dr. Koop separated twins born in the Dominican Republic.

Only one person – an operating room nurse, confronted Dr. Koop with the difficult question: “How do you feel,” she asked, “as a Christian and a doctor, to do an operation like the one you're planning?”

Dr. Koop stared back at the woman just as sternly and, after thinking for a moment, replied with a low, measured voice.

“I can watch two babies die slowly over the course of several months,” he said, “or I can watch one die swiftly and the other possibly live.”

The nurse did not seem satisfied, so Dr. Koop continued, “no one likes to say, ‘I'm going to kill one baby so that the other can live.’”

Dr. Koop finished the meeting, which was attended by about twenty nurses, checked on the twins' condition and found that they seemed stronger. Then he met with a lawyer from the firm of Dechert, Price & Rhoads.

### **His Concern**

Dr. Koop was becoming increasingly worried that he might be prosecuted for premeditated murder.

It was not a farfetched concern; under Pennsylvania law any citizen can bring a criminal complaint, and any number of legal agencies on the city, state and federal levels could decide to respond.

Dr. Koop said he did not seek protection from a civil malpractice suit. He was convinced that the parents were not the kind of people to sue after giving permission to do the surgery.

But he was concerned about a criminal action and said flatly that he would not do the surgery without adequate legal protection.

It was a difficult legal question that would involve time-consuming searches for legal precedent.

Time was short, so Dechert, Price & Rhoads immediately assigned four lawyers to the case.

The rabbis had been discussing the twins for almost a week. Rabbi Feinstein had even moved into the house of his son-in-law, Rabbi Tendler, for the duration of the discourse. Every night after dinner he would meet with Rabbi Tendler and his three sons – one a physician and rabbi and the other two rabbinical students – to discuss ethics.

Speaking only Yiddish or Hebrew, they would talk late into the night until they reached an agreement. As soon as this happened one of them would take the opposite position and they would turn around and argue or discuss in that direction.

“Two men jump out of a burning airplane,” Rabbi Tendler said in one discussion, using an analogy. “The parachute of the first man opens and he falls slowly and safely to earth.

“The parachute of the second man does not open. As he plunges past his friend, he manages to grab onto his foot and hold on. But the parachute is too small to support both of them. Now they are both plunging to their death.

“It is morally justified,” Rabbi Tendler concludes, “for the first man to kick his friend away because they would both die if he didn’t, and it was the first man who was designated for death since it was his parachute that didn’t open.”

### **Another Analogy**

“Ah, yes,” replies Dr. Yaakov Tendler, the son who is a rabbi and physician. “But take the case of the baby who is being born. Something goes wrong just as the baby’s head comes out of the vagina. It is stuck and the baby cannot be pulled out.

“The choice would be to either kill the baby and dismember it to get it out of the mother’s body, or let them battle it out to see who wins. Biblical ethics demands that you take a hands-off policy. You have two human beings in conflict with each other. Neither is guilty of a crime. You have no right to select the life of one over the other.

“It is only in the unique situation in which the child is in the uterine world, totally dependent on the mother for sustenance, that the mother’s life takes precedence over the fetus.

“In the case of the twins,” Dr. Yaakov Tendler argues, “you

have a situation where both heads have come into the world, each one making an independent claim to life. You have no right to forfeit one for the other.”

All of the heads in the room nod solemnly, then a third person speaks.

“But then there is the case of the caravan surrounded by bandits. If the bandits demand that the caravan surrender a hostage for execution or else everyone would be killed, it would be wrong to sacrifice someone.

“But on the other hand, if the bandits named a particular member of the caravan, it would be morally justified to give up this person because he had been designated for death. So it is with the twin who has been designated for death.”

“But wait!” insists one of the others in the room. “Has one of the twins been designated for death?”

And so a phone call is placed to Dr. Koop.

“Could Baby A survive if the heart was given to her? Is Baby B also designated for certain death or is there a possibility – remote though it might be – that Baby B could survive with surgery?”

The word had come down independently from different Catholic priests that the surgery would be ethical under church law, and Mrs. Barnsteiner and Miss Betsch passed the word to the nurses under them.

“God expects us to act when we can act,” concluded one priest, the Reverend Francis C. Meehan, associate professor of moral theology at the Seminary of St. Charles Borromeo in Overbrook.

“Not to choose is to choose to allow both of the babies to die,” Father Meehan told the nurses. “It was not the doctors who would be killing the baby, because they would save the girl if they could, but the terminal event that had already started for her. Death may come sooner – not because they chose it for the child but as an indirect result of their attempt to save the other child.”

Father Meehan’s words and those of the other priests were reassuring, but as the time approached for surgery three anesthesiologists and two Catholic nurses asked not to be put on the case.

Six of the seven nurses who would participate in the surgery, including Miss Betsch, however, would be Catholic.

On October 6, only five days before surgery was scheduled, word reached Dr. Koop that the rabbis had finished their deliberations. They were in favor of the surgery. The father had

agreed to it.

The body of Baby Girl A, however, would have to be returned home for burial before sundown on the day of surgery. Dr. Koop gave assurance that this would be arranged.

The final planning session came on October 7.

The new X-ray studies by Dr. Weinberg indicated that holes of unknown size did connect the left ventricle in Baby Girl B with the left ventricle in Baby Girl A. This suggested the possibility that Baby Girls B's circulation might be able to sustain this section of heart.

Dr. Weinberg had also been able to obtain the preserved specimen of a similar, six-chamber heart that had been flown down from Harvard University.

Dr. Edmunds spent several hours with the specimen, examining how the heart chambers were connected and where the blood vessels fed into the muscle.

During surgery, he would not have time to examine the throbbing heart of the twins. He might have to make quick decisions under much pressure, so he wanted to know as much as possible beforehand.

The most important tactical question confronting the surgeons was when to cut off the circulation of Baby Girl A. This would immediately kill the child and possibly threaten the heart.

No one knew how the heart would respond to the sudden drop in the volume of fluid it must push and to the loss of the entire circulatory system of Baby A.

Dr. Edmunds wanted to cut off the blood supply of Baby A from the circulatory system of Baby B as soon as possible during surgery. This would kill Baby A, but it would also protect Baby B's heart from the poisons that would start pouring into the blood the moment Baby A's tissue started to die.

When tissue dies, it releases lactic acid and potassium into the blood. These biochemicals shut down the heart if they reach sufficiently large concentrations.

The surgeons decided to simultaneously tie off the carotid artery and the jugular vein, which take blood to and from the brain, the vena cavae, which supply the top and bottom parts of the body, and the aorta, the principal artery from the heart.

When they did this, would the heart start beating wildly and ineffectively in the lethal frenzy of fibrillation? Or would it adapt quickly without any threat to Baby B?

The surgeons would find out on Tuesday, October 11.

Former District Attorney Arlen Specter, who represented the hospital in the case, felt that the only way to insure adequate protection for Dr. Koop was to get a court order authorizing him to do the surgery.

### **Similar Positions**

The three-judge panel of the Family Court heard Dr. Koop and the lawyers present their arguments in an empty courtroom on October 10, which was Columbus Day, a holiday when the building would otherwise have been closed.

The arguments presented by the lawyers were surprisingly similar to the positions taken by the rabbis during their eleven days of discourse.

Common law in Pennsylvania states that death comes after the heart stops, the lawyers argued. Since there is only one complete heart, the twins constituted one person and to remove one would be only to remove an appendage, like a gangrenous leg.

The judges dismissed this attempt at logic, which probably was just as well as far as the lawyers were concerned, since modern medicine tends to define death as the cessation of brain rather than cardiac activity.

The lawyers then went to their second line of reasoning and judicial precedent, which said that what might appear to be a crime is not a crime if a court rules that the good outweighs the bad and accordingly hands down a court order.

Because there is greater good served by saving one child instead of losing both of them, the court would be justified in issuing such an order, the lawyers insisted.

Then they cited a legal treatise on two mountain climbers, a survival story almost identical in principle to Rabbi Tendler's analogy about the parachute jumpers:

A mountain climber who falls from his perch is saved from instant death by a rope attached to a partner who has a more secure hold. But the hold is not so secure that he can keep both himself and his friend from plunging to their deaths. Because under such circumstances both would die, the climber with the more secure hold would be justified in cutting the rope.

The court apparently agreed with this logic. After a few minutes of deliberation it authorized Dr. Koop to proceed with the surgery.

It was scheduled to begin at 6 am the next day.

It was a cold, black morning and the sun had not yet risen. The streets outside Children's Hospital were deserted and quiet. It was still too early for the bustle of traffic.

Inside the hospital, brightly lit Operating Room Three was hectic with the activity of a dozen people preparing the room for surgery.

At 6:05 a voice yelled out, "They're here." All faces turned to see a white-coated aide wheel in an isolette from the intensive care unit. It contained the twins.

### **Tears in the Hallway**

It had been an emotional parting from the intensive care units. Several of the nurses touched the twins and said goodbye. One nurse explained to the person from the operating room that the twins might be a little cranky because they had been up most of the night playing.

They would be very good, the nurse said, if they were given their pacifiers. Outside in the hallway, one of the nurses hid her face because she was weeping.

She had spent a lot of time taking care of the twins, and the thought that she would never again see Baby Girl A was more than she could take.

The twins were put to sleep immediately with nitrous oxide, and the lengthy business of preparing them for surgery was begun.

Dr. Koop walked in, still drowsy from sleep. He had slept overnight in the hospital, as is his practice before particularly difficult surgery.

It takes him all night to prepare himself mentally for difficult surgery and he didn't want to risk being distracted by heavy traffic on the highway, a flat tire or some other extraneous happening.

For the moment there was nothing much for Dr. Koop to do, so he wandered about the operating room suite, talking to nurses. Dr. Edmunds had been up operating in another case for several hours already, having been called in for emergency heart surgery. He would be exhausted before the day's end.

Dr. Koop and his close assistant, Dr. Louise Schnauffer, who had assisted at the other two twin operations, did not begin their ritualistic ten-minute scrub until 8:40.

And it wasn't until 9:25 that the first incision was made into the tissue connecting the two twins, glistening brown from the Betadine disinfectant they had been washed in.

**Oxygen Level Low**

The anesthesiologists were concerned because the amount of oxygen detected in the blood was less than normal, indicating a ventilation problem either on the part of the equipment or the physiology of the twins.

By 10:10, four hours after the twins had been put to sleep, the oxygen level in the blood had dropped to dangerously low levels, despite the increased concentrations anesthesiologists were delivering. But there was nothing anyone could do at this point but proceed and hope.

By 10:35 the surgeons had isolated the major blood vessels. Sutures were pulled loosely around them, ready to be tied off simultaneously on signal.

At precisely 10:40, Dr. Koop gave the signal and he personally tied off the carotid artery feeding blood to the brain of Baby Girl A.

Death was instantaneous.

For several long minutes the surgeons and everyone else in the room braced themselves for the reports from the anesthesiologist monitoring the surviving twin.

Would all the oscilloscopes and digital readouts start to turn bad, indicating that the heart was going into fibrillation?

There was nothing. In fact, the oxygen level in the blood mysteriously started to improve.

It was up to Dr. Edmunds now. Working swiftly he tied off the major blood vessels of Baby A's partial heart. He was in luck. There was no need to make any grafts. He wouldn't even have to cut into the pericardium, the protective sac around the heart.

Everything was moving along beautifully, several hours ahead of schedule because no one was running into any of the anticipated problems. Even the anesthesiologists had no trouble getting the tubes down the babies' throats.

Quickly the surgeons separated the heart and lungs from Baby A and all the other tissue connecting one baby to the other.

At 11:25 the separation was complete in every respect. Only the two heart chambers and lungs of Baby A remained attached to Baby B. The lungs were subsequently detached.

Wrapping the shell of Baby A into a green surgical drape so no one would see her, Dr. Koop gently and respectfully carried the body of the infant to a sterile table at the other end of the operating room.

They put her on a sterile table on the chance that they might need rib bones or skin as grafts to help close the gaping wound in her sister's chest. But it was not to be needed.

The rest of the operation went without incident. Dr. Koop built an ample chest around the large, throbbing heart now in the anatomically proper place, and closed the wound.

If the girl survived, she could grow up to lead an essentially normal life. Her larger-than-average rib cage probably would not be conspicuous. The skin was even put back in such a way that she would have breasts in the proper place.

By 1:30 it was all over, and Dr. Koop flopped down on a seat in the operating room lounge to fill out the death certificate.

"Cause of death," he said, reading aloud to himself as Miss Betsch stood nearby waiting for him to complete the form, "hypoxia (lack of oxygen) due to operation to separate Siamese twins."

One hour later, an exhausted Dr. Koop and the other tired members of the team were conducting a press conference.

Baby Girl B was back in the intensive care unit, alone this time, in stable but critical condition.

And the body of her sister was in a vehicle speeding home for burial before sundown.

*"The decision to perform surgery was made although it was known that one twin would not survive because the shared heart could only go to one child."*

*"Baby B, the surviving twin, died three months later of liver failure and overwhelming infection."*

*From the Children's Hospital of Philadelphia's website,  
[www.chop.edu/clinical/surgery/twins/facts.shtml](http://www.chop.edu/clinical/surgery/twins/facts.shtml)*

*Source: ASSIA – Jewish Medical Ethics,  
Vol. IV, No. 1, February 2001, pp. 14-21*