S552 NOELLE™
Maternal Birthing Torso

INSTRUCTION MANUAL

Gaumard® Scientific Company, Inc.
14700 SW 136th Street
Miami, FL 33196
e-mail: sima@gaumard.com

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY PRIOR TO STARTING TRAINING EXERCISES ON YOUR NEW SIMULATOR.

HANDLE YOUR SIMULATOR IN THE SAME MANNER AS YOU WOULD HANDLE YOUR PATIENT – WITH CARE AND CONSIDERATION.

SHOULD YOU HAVE ANY QUESTIONS AFTER READING THIS INSTRUCTION MANUAL, CALL OR E-MAIL OUR CUSTOMER SERVICE DEPARTMENT.

800-882-6655 USA Toll Free
305-971-3790 Worldwide
305-667-6085 Fax
e-mail: sima@gaumard.com

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Section 1 – Rapid Assembly and Checkout

Introduction – The NOELLE Birthing Torso permits students to appreciate the birthing experience from the onset of labor to delivery. This is one of five maternal/child learning systems developed at Gaumard. It is supplied with an extensive training guide containing:

Specific OB tasks every student must know
Discussion questions
Quizzes and puzzles
Student readings
Two basic OB scenarios
Seven advanced OB scenarios

Additional instructor and student OB training guides can be purchased by contacting Gaumard Scientific.

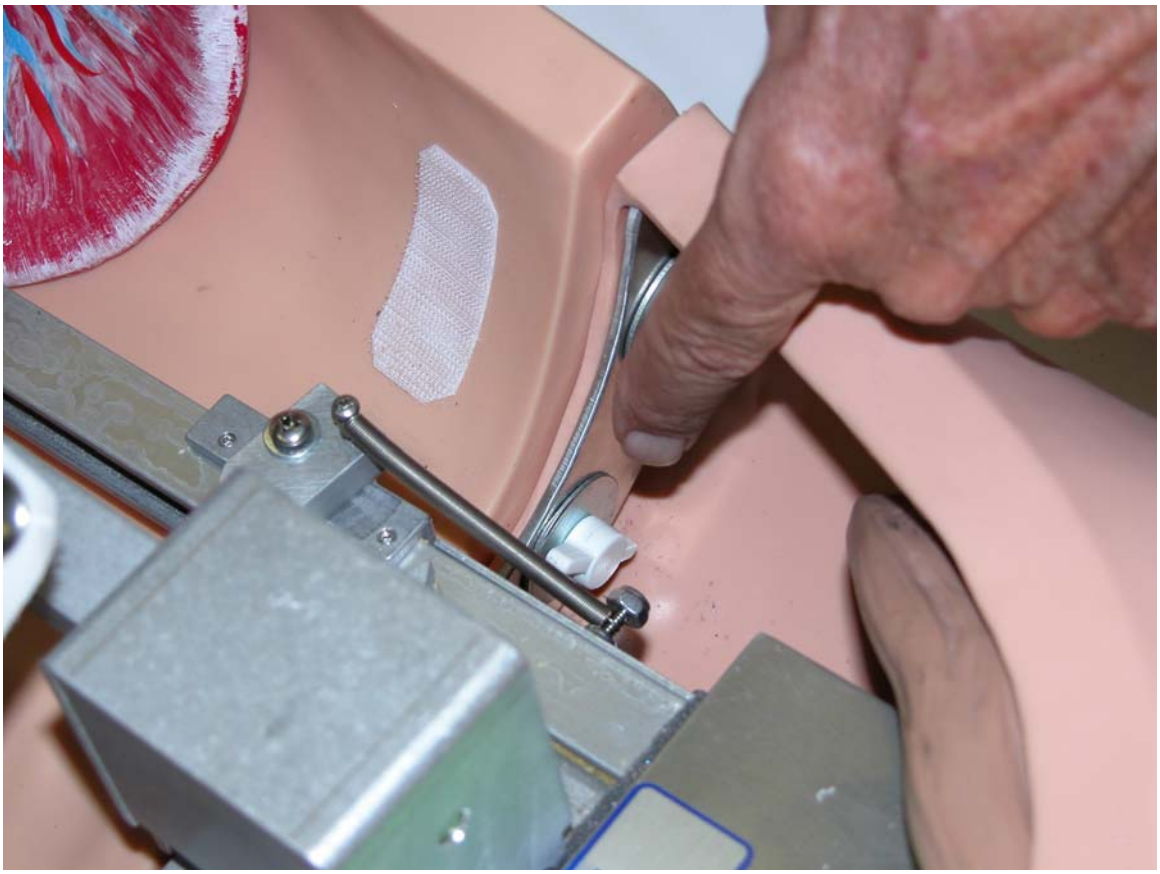
Your NOELLE S552 Maternal and Neonatal Birthing System includes the following:

Quantity	Item
One	Instruction demo on CD-ROM
One	Abdomen cover with speaker attached
One	Automatic birthing system with mounting flange
One	Birthing controller with fetal heart tones and power supply
Two	Mechanical adaptors
One	Elevating “cushion” for Leopold Maneuvers
Three	Dilating cervices
One	Placenta
Three	Vulvas – fully dilated
Three	Vulva for postpartum repair of episotomies
Three	Umbilical cords
Two	Umbilical clamps
One	Silicone lubricant
One	Articulating birthing fetus with patent mouth and nose
One	Instructions for use
One	NOELLE Training Guide with both basic and advanced scenarios

Assembly and checkout

NOELLE™ is shipped assembled.

Place NOELLE on a flat surface. Remove the abdominal cover, remove the fetus, elevating pillow and other materials packed within the abdomen. Note that the automatic birthing mechanism secures the upper and lower torsos using four (4) tee-nuts. Also note that the speaker in the abdominal cover is connected to the birthing mechanism providing the fetal tones.



NOELLE's birthing mechanism is secured to the upper and lower torsos with four (4) tee-nuts

Birthing Controller

The birthing controller is powered by 100-240 VAC and 50-60 Hertz. Connect the power cord provided to the Birthing Controller. In certain countries, the customer may have to supply an electrical wall adapter to connect between NOELLE's power cord to your wall outlet. The Birthing controller has four (4) switches:

Fetal heart rate
Birthing speed
Pause/Resume
On/Off

The Birthing Controller operates 100-240VAC and regulates the speed of delivery as well as fetal heart rate. Delivery can be paused at any point to extend delivery time or to simulate certain complications such as shoulder dystocia. Note: NOELLE's head and IV arm are not available on the model S552.

To begin, observe the movement of the automatic birthing mechanism without the fetus in place. This “test run” will be done without the “tummy cover” in place. Choose a fetal heart rate of say 140, and a delivery speed of “1” which is the fastest birthing speed. Select “On” and press “Resume”. A small motor located in the birthing mechanism will start which provides internal rotation, movement down the birth canal, and finally external rotation so that the fetal shoulders may align with the long axis of the vulval insert. Observe that the motor will stop from time to time in order to more realistically simulate the birthing process. Note that the fetal heart tones may be heard during delivery.

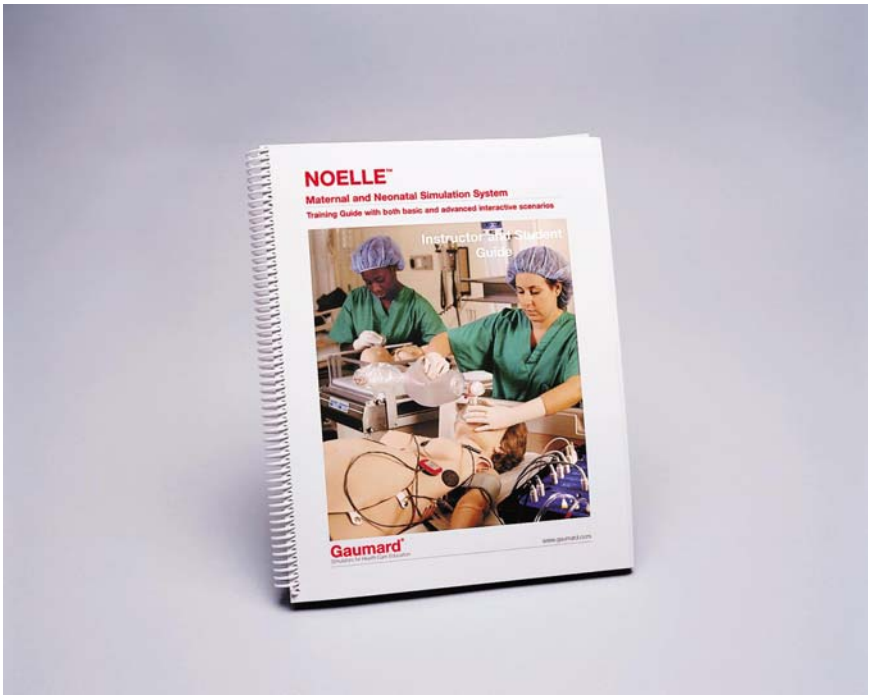
Select “Pause” at any time and the mechanism will stop. Select “Resume” when ready. Note that two adapters are attached to the birthing mechanism. Select one adapter and the fetus will be birthed to about the shoulders; select two adapters and the entire head and upper torso will be birthed before the mechanism stops.

Allow the birthing mechanism to reach the limit of its travel where it will stop. Select “Pause” and the mechanism will return to its original position. Now select a different delivery speed , a different fetal heart rate, and select “Resume” to begin another birthing process.

Section 2 - NOELLE™ Obstetric Care

Overview

NOELLE is supplied with a detailed Instructor and Student guide describing what students really need to know as well as quizzes and nine scenarios. Extra copies of the Instructor and/or Student Guides are available from Gaumard Scientific.



The NOELLE birthing mechanism offers the ability to demonstrate a variety of obstetric techniques including:

Fetal palpation
Vaginal delivery
Shoulder dystocia
Cesarean section delivery
Complete, frank and footling breech deliveries
External version
Cord prolapse
Placenta previa
Vacuum delivery

Automatic Birthing Mechanism

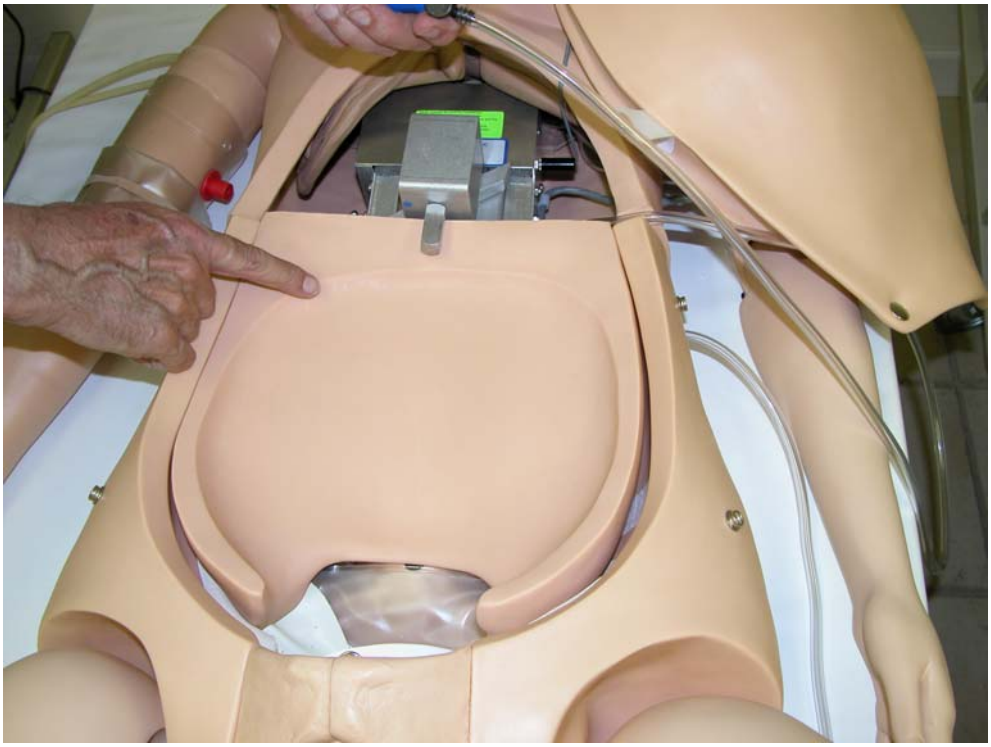
NOELLE is supplied with an electromechanical system to automatically deliver the fetus. The system provides for internal rotation, linear motion to "crowning", and a second rotation to present the fetal shoulders parallel to the longitudinal axis of the vulva. Placing the fetus in the right occipital anterior (**ROA)** position will result in a "nose down" crowning followed by shoulder rotation. Placing the fetus in the left occipital posterior (**LOP)** position will result in a "nose up" presentation which may require some assistance on the part of the student or Instructor. Breech deliveries may also be performed as detailed later in these Instructions.

Dilating Cervix

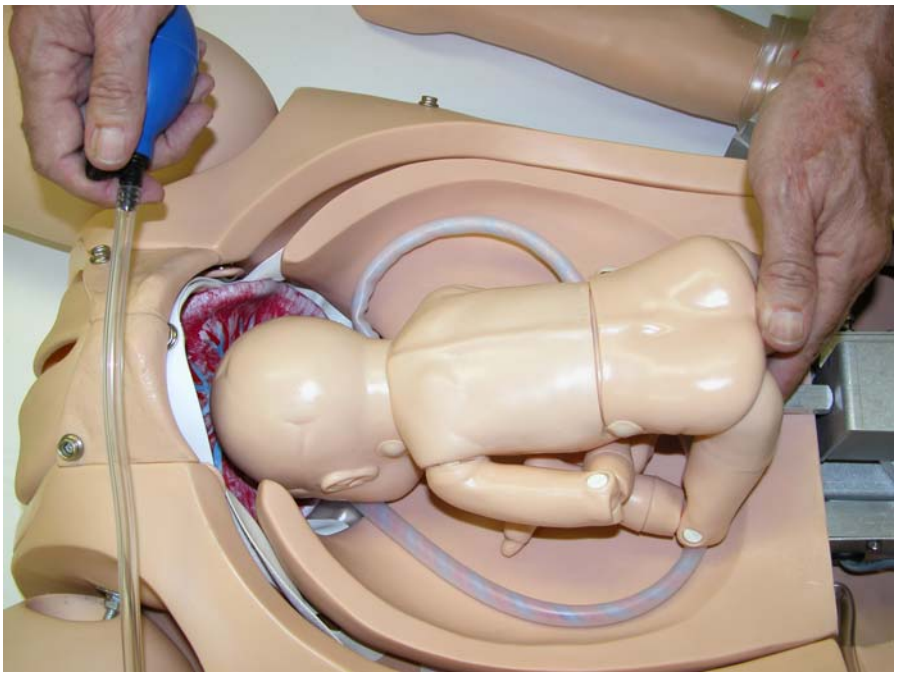
As the fetus proceeds down the birth canal it pushes against a simulated uterus/cervix. It looks like a disc with a small hole in the center and is attached to the entrance of the birth canal using three (3) metal snaps. The device is designed to permit considerable distension. During delivery the presenting part dilates and swells the cervix and swells as the fetus moves down the birth canal. At crowning the head passes through the cervix and through the vulval insert. Students can measure birth descent and cervical dilation which may be used to plot the progress of labor.

Leopold maneuvers using the articulating fetus

To perform Leopold Maneuvers, retract the birthing mechanism fully and remove the *articulating birthing baby*. Place the elevating cushion within the birthing torso. Route the inflation bulb outside NOELLE through any space provided on the left side. Place the birthing baby in the elevating cushion in the vertex, breech, or transverse positions. Install the "tummy cover". Inflate the elevating cushion until the fetus is felt within the abdomen.



Place elevating pillow within simulator



Place fetus onto elevating pillow and lift fetus anteriorly using squeeze bulb.

Snap abdominal cover into place. Note that arms and legs are not supplied with the model S552

Lift fetus anteriorly using squeeze bulb.

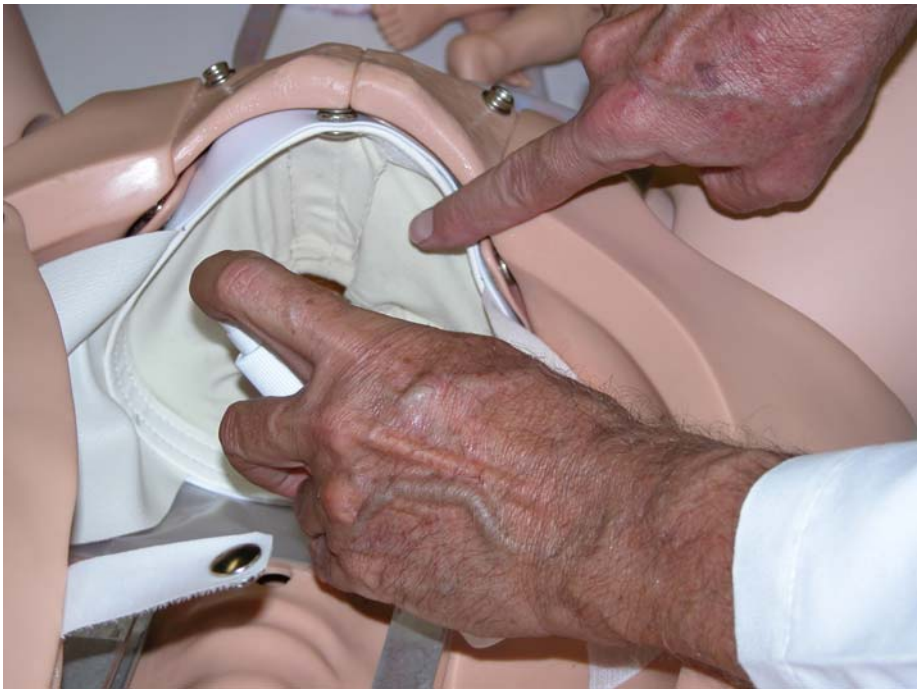
Conduct the four Leopold Maneuvers.

Normal Labor and Delivery

To conduct a delivery, remove the "tummy cover" and place the articulating birthing baby on the birthing mechanism. **Lubricate the fetal head and shoulders, plus the inside of the vulva using water based silicone.** Attach the umbilical cord to the baby, route the cord so it does not bind in the mechanism and attach the placenta to the pelvic cavity using the Velcro® fastener. Note that the fetus has a receptacle at the rectum into which the matching pin located on the birthing mechanism is inserted.

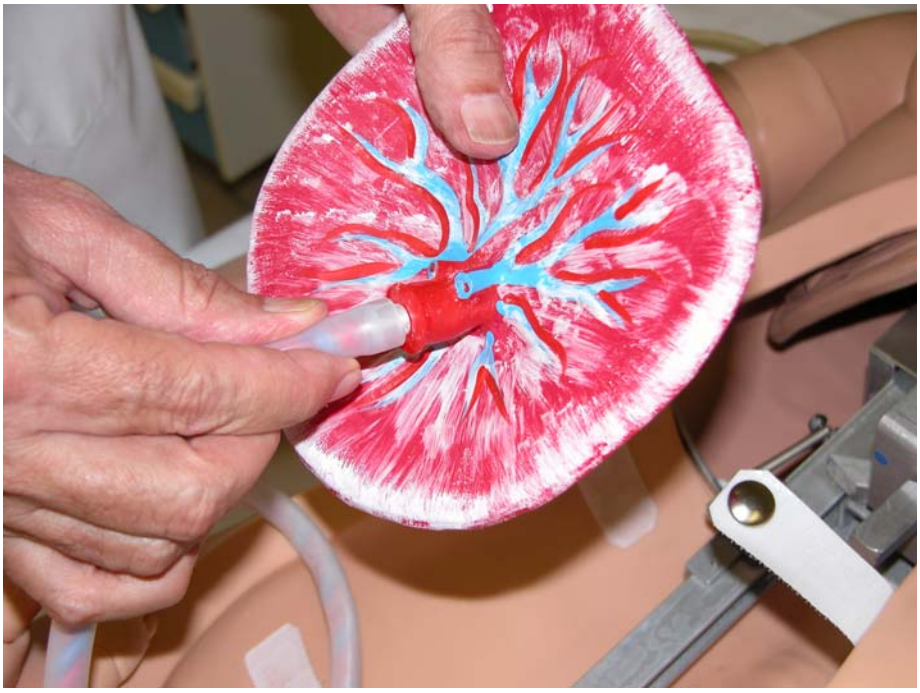
Position the baby so that its head faces toward the left side of the simulator. This is the ROA or *right occipital anterior* position. Note: any other position may be chosen; however, take care that the fetal shoulders are aligned with the long axis of the vulval insert. **Caution: if the fetal shoulders are NOT aligned with the vulva, binding may occur**.

Remember to lubricate the inside of the vulva

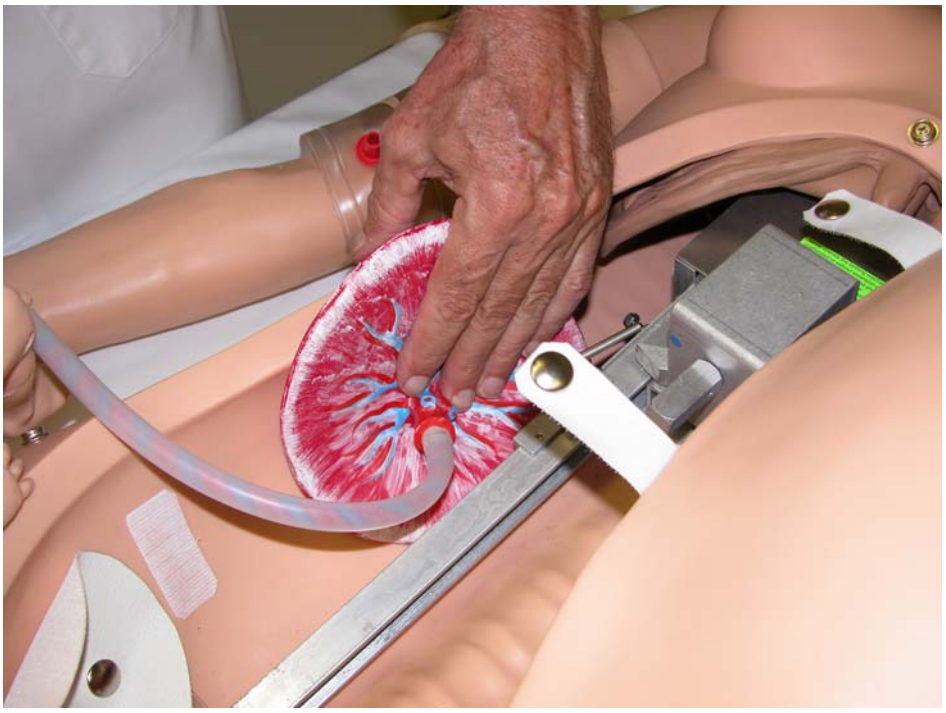


Also lubricate the inside of the dilating cervix.

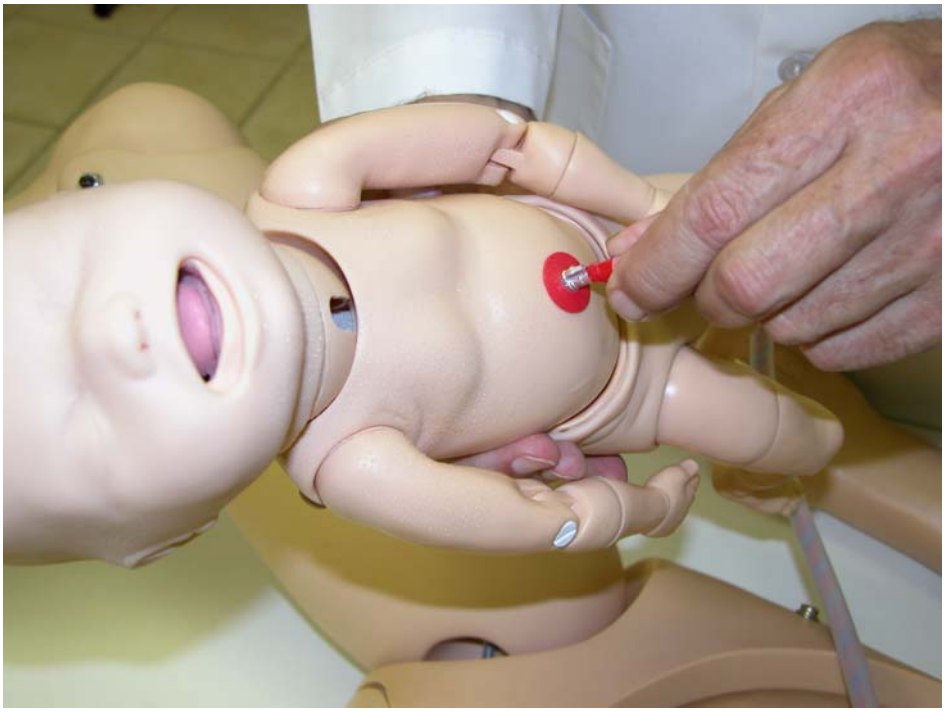
Now thoroughly lubricate the fetal head and shoulders.



Attach the umbilicus to the placenta.

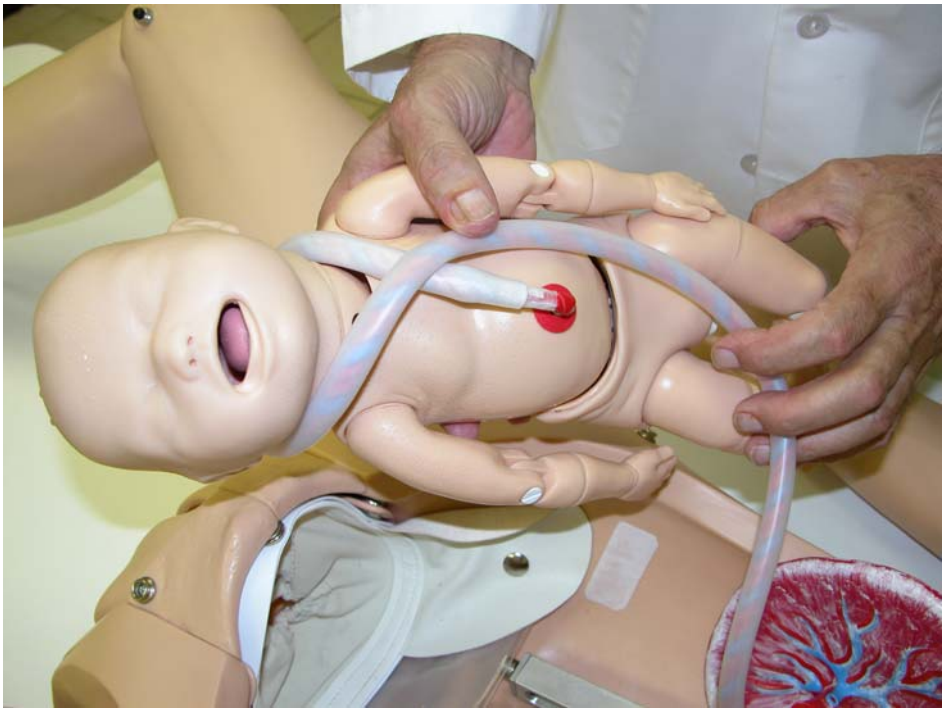


Attach placenta to one of three positions on the abdominal wall. Orienting the Velcro patches in parallel causes the placenta to be retained; orienting them at right angles causes the placenta to release with modest traction.

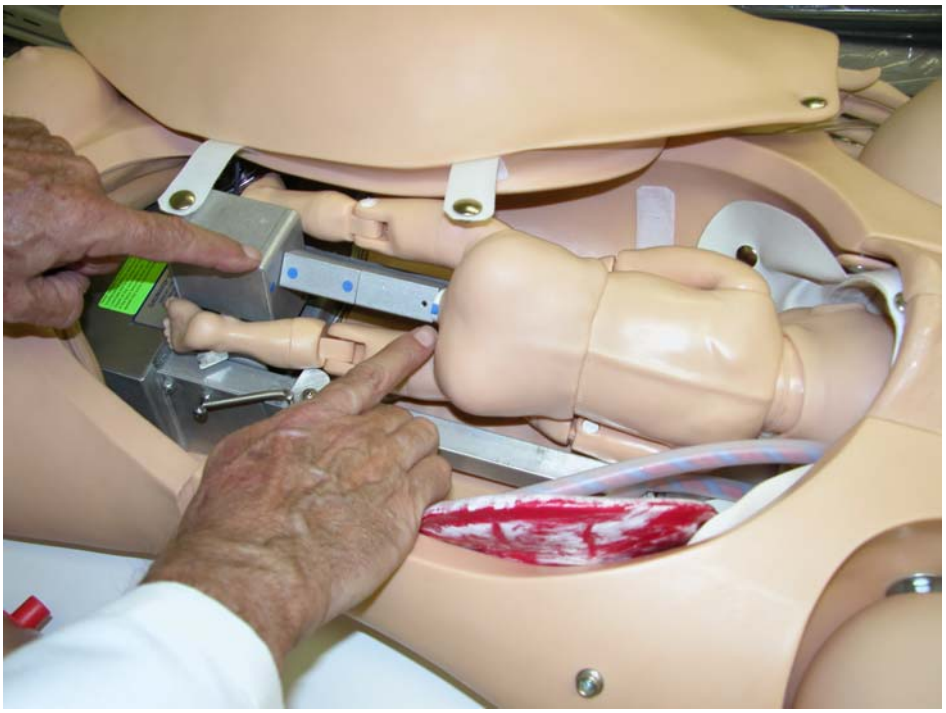


Attach umbilicus to fetus.

Position the fetal arms and legs as shown



Umbilical cord can be wrapped once around the fetal neck



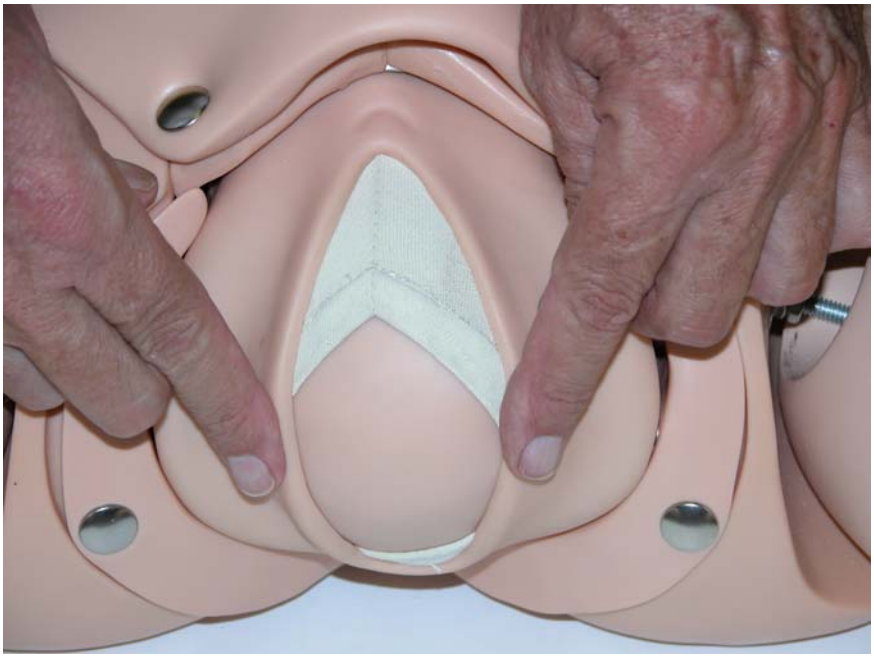
Attach fetus to birthing mechanism using one or two birthing adapters

Turn on the monitor and select a fetal heart rate from 60 to 200 beats per minute. You may adjust the heartrate at any time during delivery to simulate episodes of bradycardia or tachycardia. Now select one of four delivery speeds. Speed “1” is the fastest and can be used to demonstrate a precipitous delivery. Speed “4” requires about 25 minutes to complete. You may lengthen delivery time in any of the four speeds by pressing the PAUSE and then RESUME button.

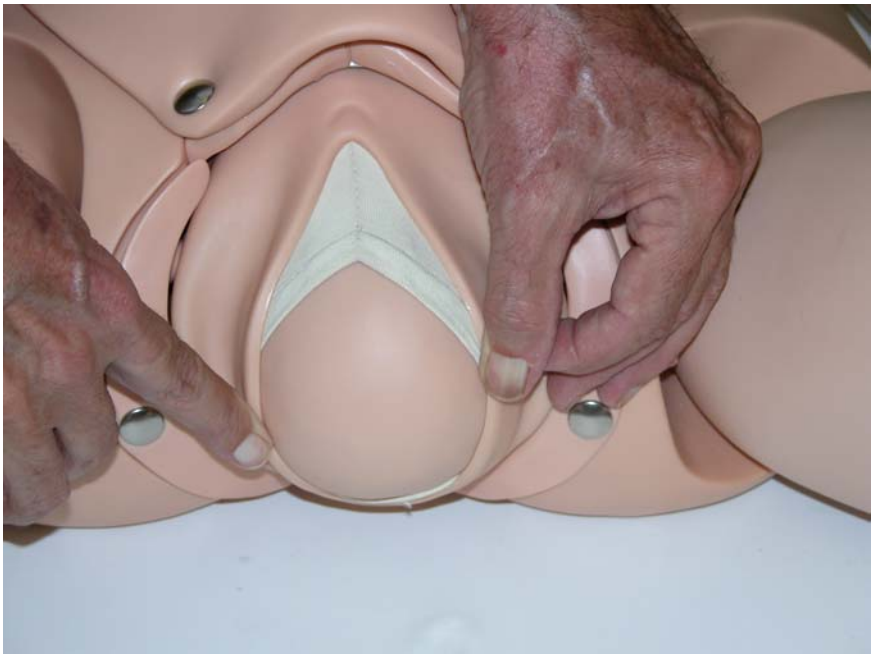
The first few centimeters of movement normally take about half the total delivery time. Note that the baby rotates internally as it moves forward and that the baby turns after the head is delivered and before the shoulders are delivered. *The student or instructor may help the fetal head and shoulders through the vulva as in real life.* Once the shoulders are delivered, the student can remove the baby from the mother in the normal manner.

The birthing cycle can be paused at any point and then resumed. The sound produced by the small motor is an excellent indicator whether the fetal movement is being slowed by undue friction. In the event the birthing baby binds in the birth canal, the mechanism will pause and back up. It will automatically try a second time. If this occurs, remove the abdominal cover and determine the cause. **In most cases, binding can be prevented by thoroughly lubricating the fetus, the dilating cervix and the vulva.**

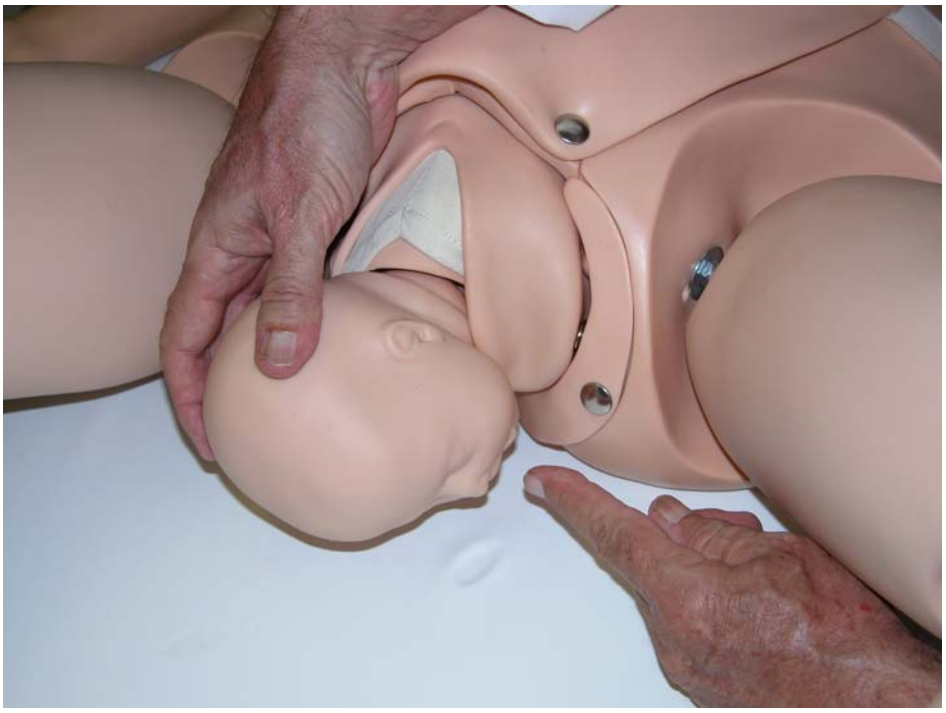
During delivery, fetal heart tones can be heard by placing the bell of a conventional stethoscope on the abdomen. Move it around until the tones are clearly heard. Tones are supplied via a small speaker which can be located in three areas depending upon the fetal lie. The amplitude of the fetal heart tones is set at Gaumard. To adjust the amplitude, look for a small hole on the bottom of the Birthing Controller. Insert a small screwdriver, engage the adjusting screw and turn clockwise or counter clockwise.



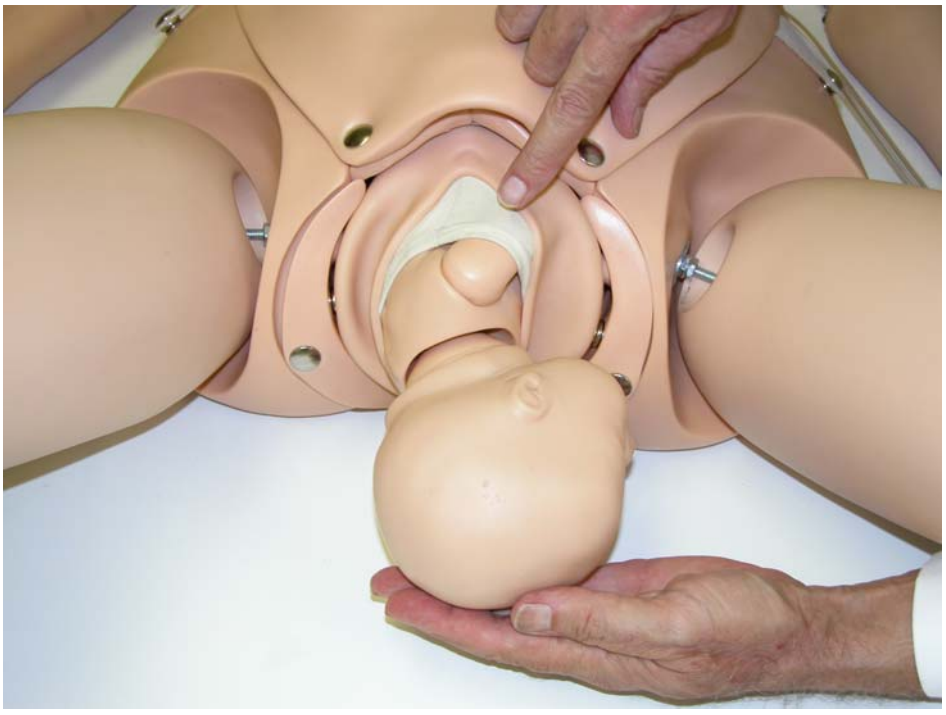
Cervix dilates as fetal head moves down birth canal



Fetal head at crowning



Mouth and nose suctioning can be simulated.

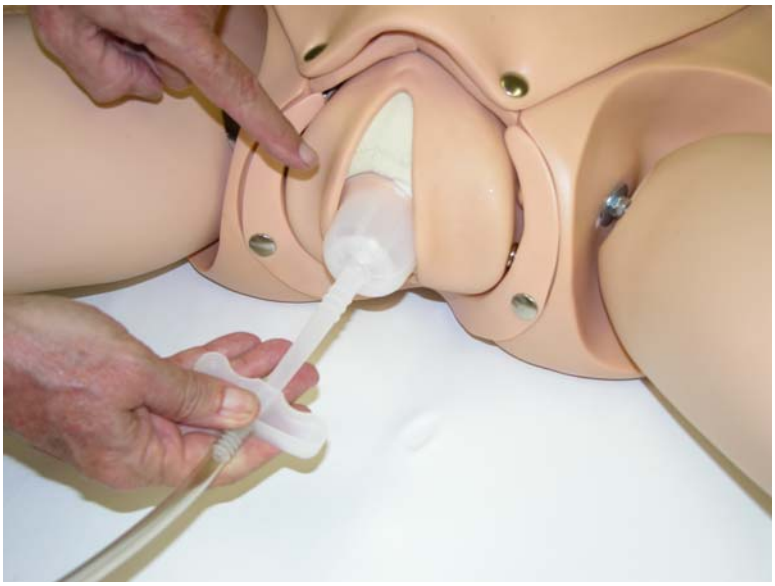


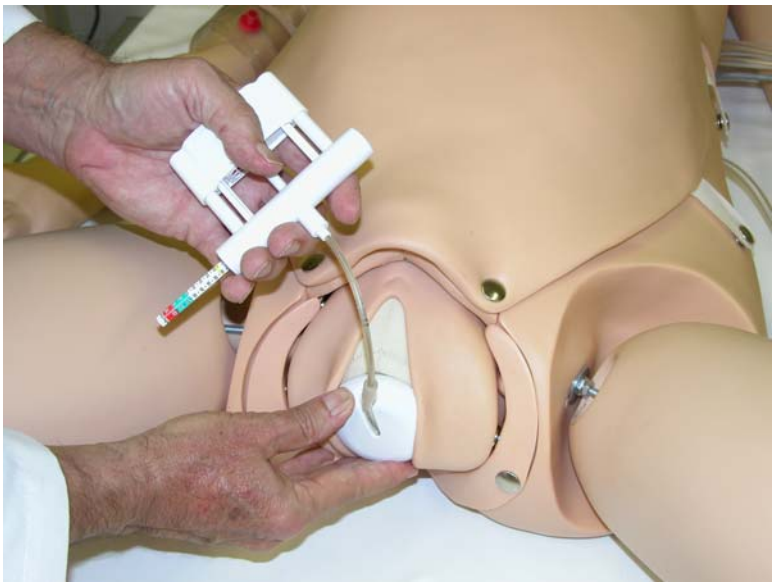
External fetal rotation aligns shoulders with the longitudinal axis of the vulva

Vacuum-assisted Delivery

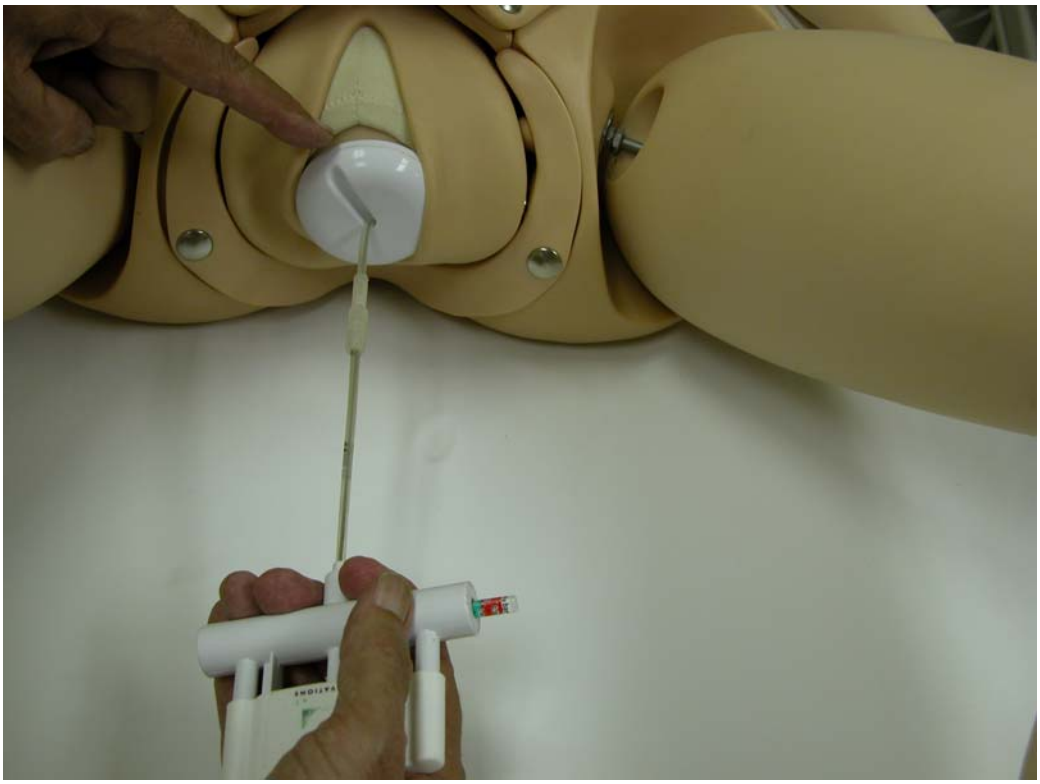
Vacuum-assisted delivery is a technique for the management of arrest during the second stage of labor. Criteria for successful delivery include: (1) cervical dilation is complete;(2) cephalic presentation is confirmed ;(3) the fetal head is no more than 1/5 palpable above the pubic bone; (4) effective uterine contractions continue; (5) maternal expulsive efforts continue.

Vacuum-assisted delivery may be practiced with the NOELLE simulator using a vacuum cup supplied by a number of suppliers.





Lubricate the fetus supplied with NOELLE and place it onto the delivery system in the normal ROA position. **Note: NOELLE models supplied since Jan 2005 include a soft scalp you may place over the skull providing a better vacuum seal between the fetal head and the vacuum cup.** Activate the delivery mechanism and the fetus will move down the birth canal. Select "Pause" as soon as the cervix is fully dilated. This is before crowning and "pausing" will stop the delivery mechanism. Insert a lubricated vacuum cup into the vagina and place the cup onto the flexion point of the skull located between the fontanelles. Use the manual vacuum pump supplied with such devices to cause the attachment of the cup to the skull. Wait a few minutes for the "chignon" to form.



Vacuum assist device attached to fetal scalp between fontanelles

Await the next contraction that may be simulated by asking NOELLE to bear down, and having the student apply steady traction perpendicular to the plane of the cup. Select the "Resume" key, then the "Pause" key again to move the fetus slightly down the birth canal. Some vacuum-assisted delivery devices are equipped with a means for measuring the amount of traction which may be on the order of about 15 pounds. The student must stop traction when the simulated contraction ceases. Repeat this procedure of waiting for the simulated contraction and providing traction during the contraction **if and only if** the fetus is moving down the birth canal with each contraction. The student may also assess the potential need for an episiotomy to facilitate delivery. **In the event delivery progress is not being made, NOELLE must be immediately referred as a potential "C" section candidate.**

Shoulder Dystocia

Shoulder dystocia is a dangerous conditions defined in the NOELLE Guide as the "arrest of delivery of the fetal body after the successful delivery of the fetal head". It may be characterized by the so-called "turtle-sign" wherein the fetal head moves forward and then retracts. During dystocia, the fetal shoulders become wedged behind the symphysis. NOELLE may be used to practice the resolution of dystocia using episiotomy techniques, the McRobert's maneuver, suprapubic pressure, posterior arm sweep or elbow-knee delivery.

Suprapubic pressure may also release the fetal shoulder

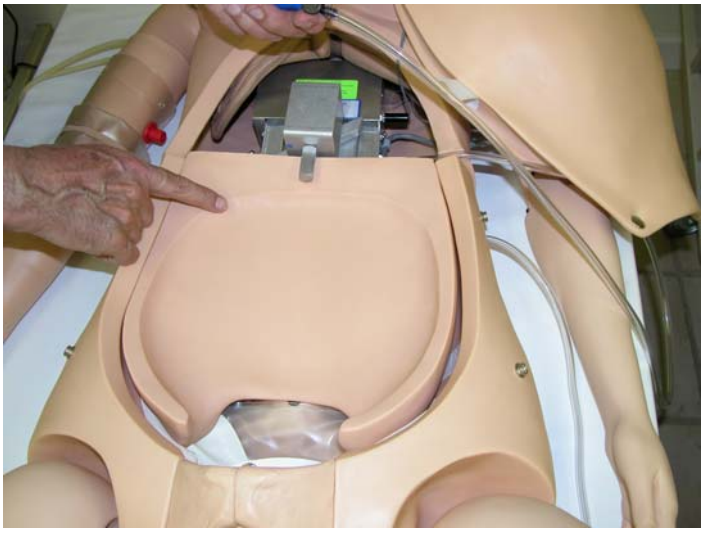
To demonstrate shoulder dystocia, place the fetal baby in **the ROA position**. Locate a small squeeze bulb at the lower left side of NOELLE and note it is attached to an inflatable bag near the dilating cervix. Inflate the bag using the manual squeeze bulb noting that the fetal head and shoulders will rise toward the symphysis. Note that the fetal head is palpable beneath the stomach cover. Activate the delivery mechanism moving the fetus down the birth canal until the fetal head is delivered. Simulate dystocia by pausing the delivery mechanism. Students must use the various maneuvers attempting to deliver the baby. If the fetus can not be delivered the Instructor can press the "Resume" key which will cause the fetus to resume it movement down the birth canal and the students should try again. **Note: NOELLE models produced after March 10, 2005 incorporate a "fifth speed" on the controller which delivers the fetus and produces the "turtle sign". This is followed by a three (3) minute pause during which time the students must attempt to deliver the baby. When time expires the mechanism resumes delivery and the students must start over.**

Manual squeeze bulb expands inflatable bag beneath fetus lifting it anteriorly, simulating locking the shoulder behind pubic bone.

Note: do not place the fetus onto the delivery mechanism in the LOA position as it will attempt to birth with its shoulders at right angles to the axis of the vulva causing undo stress on the delivery mechanism. At any time the Instructor may completely retract the delivery mechanism by toggling the power switch first to the "off " position and then to the "on" position.

Cesarean Delivery

Cesarean birth is the delivery of the fetus through an abdominal and uterine incision A Cesarean delivery, also called a C-section may be performed as a result of breech presentation, pre-term or dysfunctional labor, fetal distress, prolapsed umbilical cord, placenta previa, abruption placenta, or a variety of other abnormalities. Demonstrate a C-section using NOELLE by removing the metal snaps just above the pubic bone and birthing the baby between the stomach cover and the pubic bone. **An optional abdominal cover is available if the Instructor wishes to demonstrate midline or "bikini" incisions.**

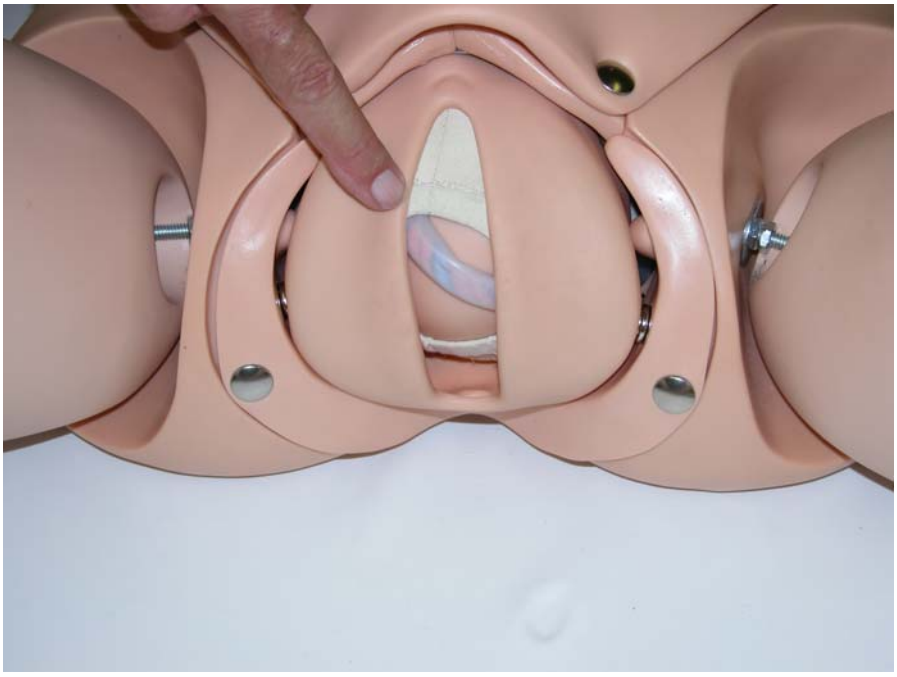


Delivery mechanism fully retracted and inflatable cushion inserted

NOELLE "C" section delivery using optional abdominal cover with "bikini" incision available as P/N 560.029

Prolapse of the Umbilical Cord

Prolapse of the umbilical cord is a dangerous complication which involves the presence of the umbilical cord in the birth canal in front of the presenting part. This condition may occur as a result of breech presentation, transverse lies, a small fetus, an overly long cord, a placenta placed low in the uterus, or other abnormalities.



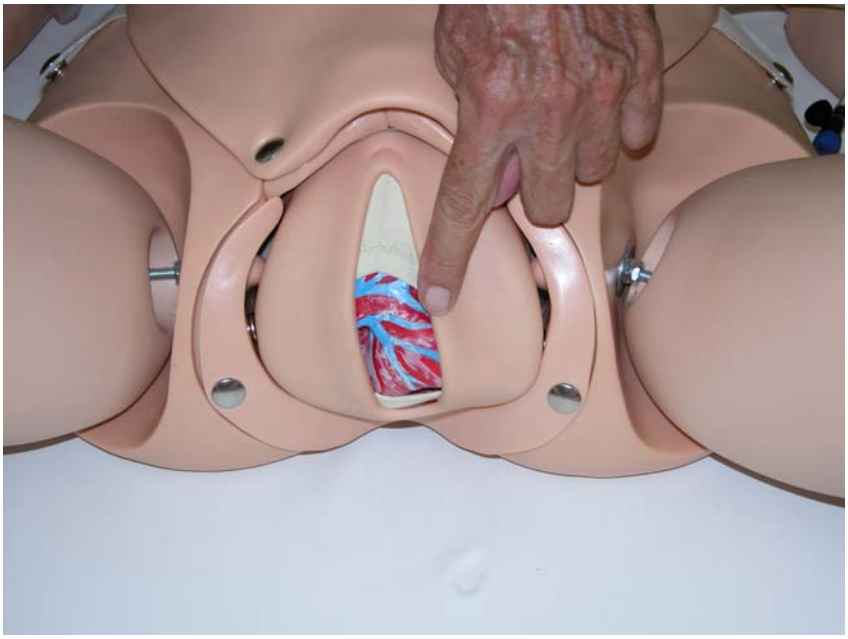
Prolapse of the umbilical cord

If the cord is observed in the birth canal ahead of the presenting part, gloved fingers should be inserted and the presenting part lifted off the cord to relieve pressure on the cord. This procedure must be maintained until the prolapse has been solved, either by a termination to the compression of the cord, or until delivery of the fetus by C-section.

Placenta Previa

Placenta previa is a condition in which the placenta is located in the lower half of the uterus, located near or covering the cervical os. There are three types of placenta previa: total, partial and marginal. Total placenta previa is when the placenta completely covers the cervical os. Partial placenta previa is when the cervical os is partially covered by the placenta. Marginal placenta previa is when the edge of the placenta extends to the internal os, where the uterus opens into the vaginal canal.

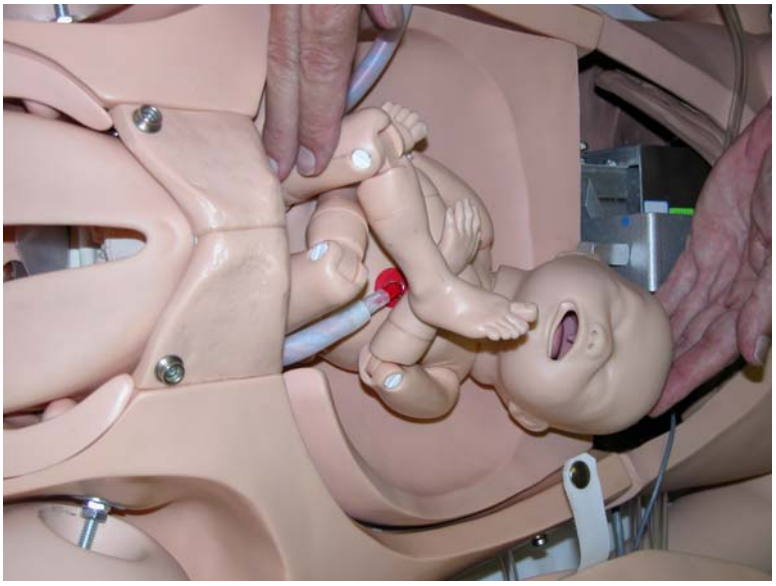
To simulate placenta previa with NOELLE, place the placenta in the desired position to simulate the condition, with the maternal side against the uterine wall or the cervical os. Then place the fetus within the uterine cavity with the presenting part closest to the placenta.



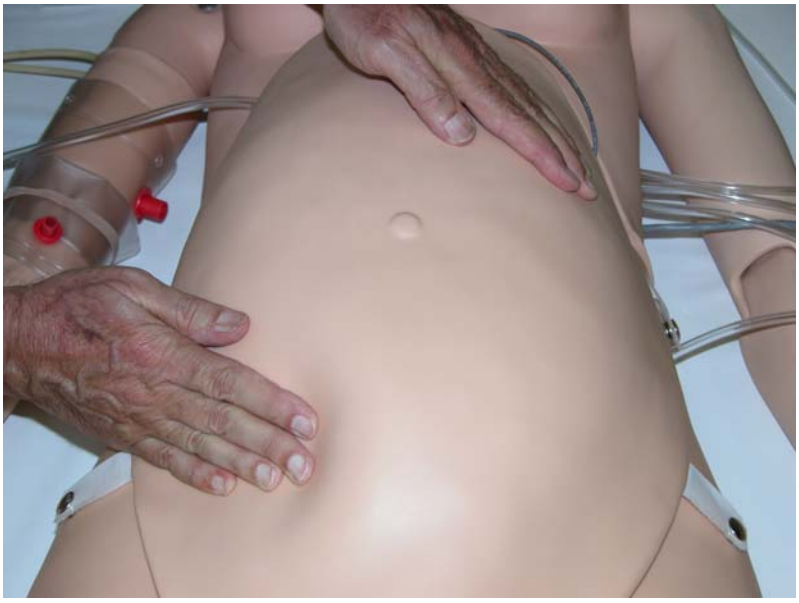
Total placenta previa in which the placenta completely covers the well effaced cervical os

External Version

Version may be attempted to rotate the fetus from a breech position into one permitting normal vertex presentation. To practice “version” remove the abdominal cover and the fetus, retract the delivery mechanism fully and insert the inflatable cushion. Next, remove the foam in the abdominal cover. Thoroughly lubricate the inside surface of the abdominal cover, the fetus, and the inflatable cushion.



Place the lubricated fetus onto the lubricated inflatable cushion and snap the lubricated abdominal cover into place. Inflate the cushion lifting the fetus anteriorly. **Inflate the cushion at the base of the pelvic cavity to position fetus.**



Confirm the breech position and attempt to manually turn the fetus within the uterus by transabdominal manipulation

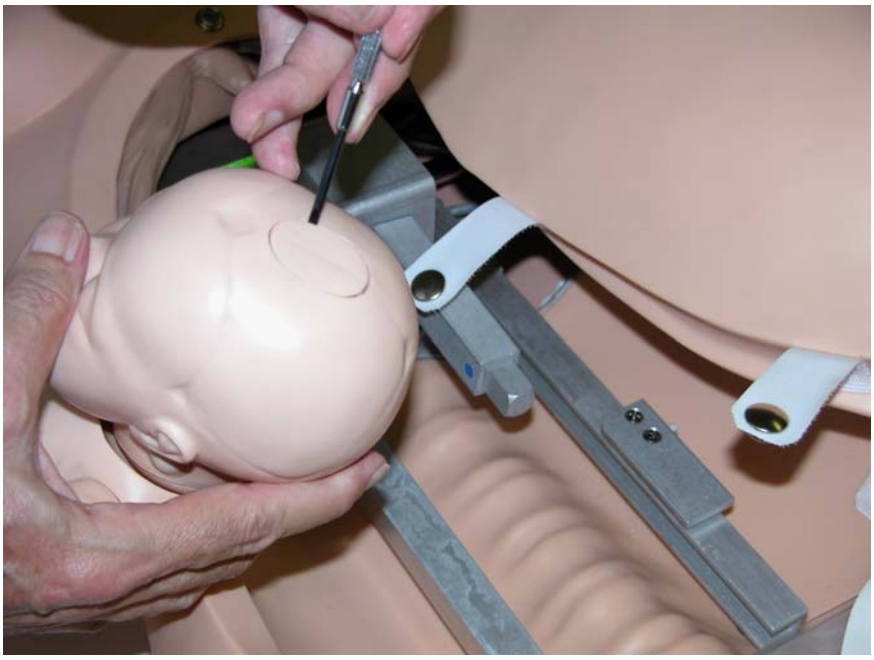
Breech Birth

Breech birth occurs when either the buttocks or lower extremities of the fetus are the presenting part. There are three types of breech birth: frank, complete and incomplete or footling. Frank breech occurs when the buttocks are the presenting part and the legs of the fetus are extended up toward the baby's head. Complete breech occurs when the buttocks are the presenting part and the baby's legs are flexed along the lower torso. Footling or incomplete breech occurs when one of both of the legs are the presenting part.

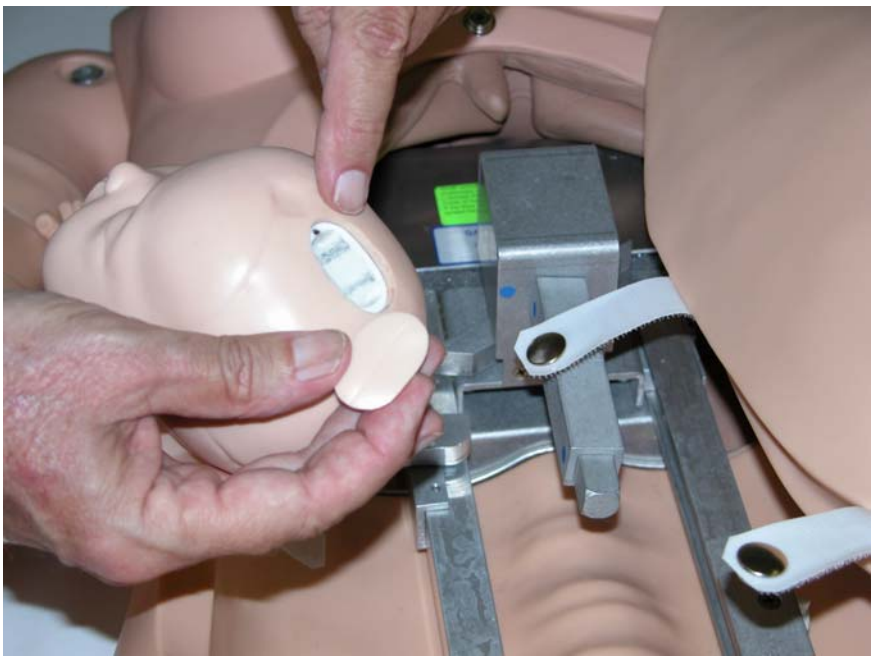
There are many differences in labor between the breech presentation and the vertex presentation. With the descent, the posterior hip encounters the pelvic floor and internal rotation takes place, allowing the anterior hip to move beneath the pubic arch. The anterior hip then delivers, followed by the posterior hip, the legs and the feet. External rotation allows the shoulders to move into the maternal pelvic and internal rotation allows the shoulders to deliver. Downward traction allows the delivery of the anterior shoulder, with a finger inserted into the birth canal to free the arm. Upward traction allows the posterior shoulder to deliver and the posterior arm is freed in the same manner. After the delivery of the shoulders, the fetal head delivers in a flexed or heads up position.

Although it is possible for a vaginal delivery of breech presentations, once a breech presentation has been confirmed, a Cesarean is often performed to lower the risk of infant mortality due to cord prolapse or birth asphyxia.

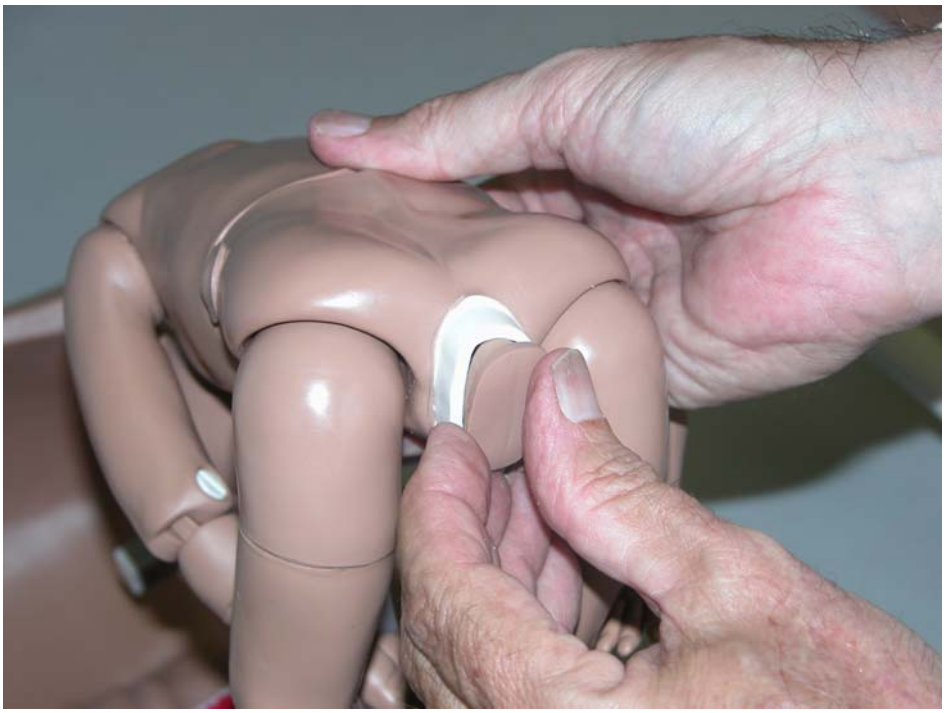
To simulate breech presentations with the NOELLE, retract the birthing mechanism fully, remove the cover in the fetal head, insert the birthing mechanism into the fetal head using either one or two adapters and place the fetal legs in either an extended position to simulate “footling” delivery or retract the legs for a “frank” delivery.



Remove plug in fetal head for breech delivery

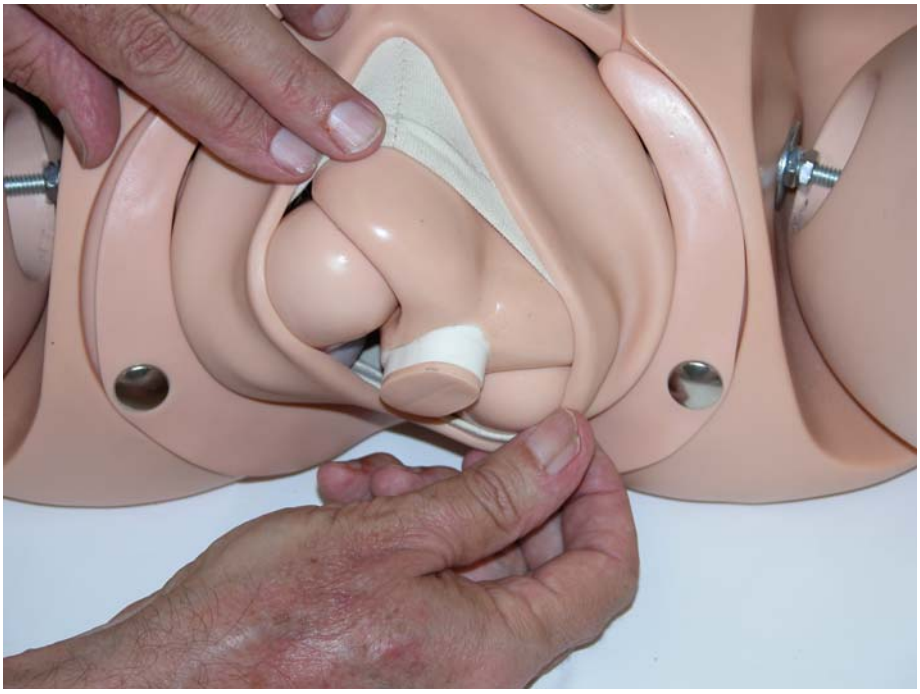


Removing plug reveals aperture for birthing mechanism

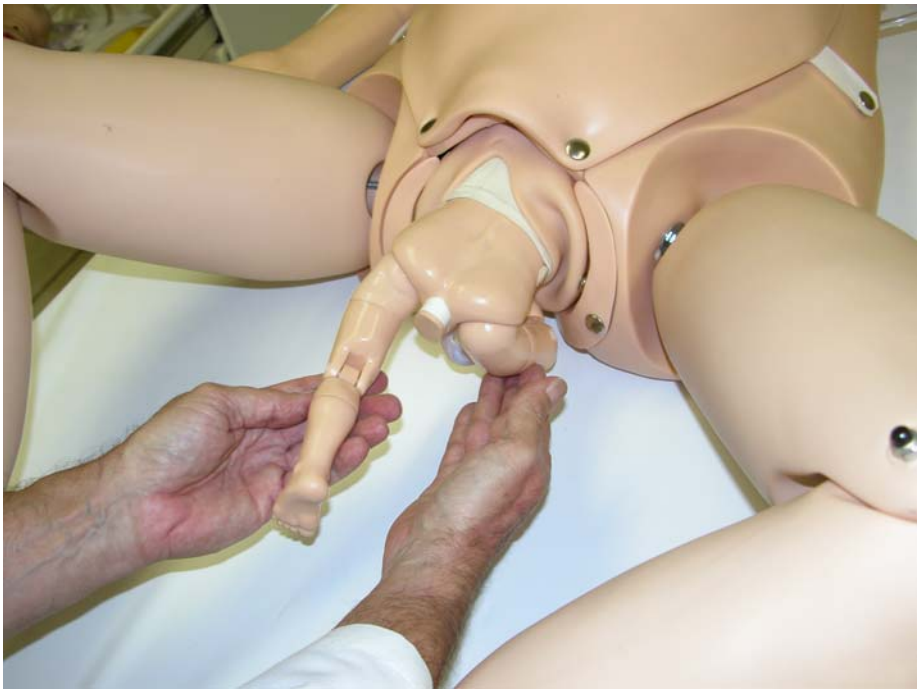


One way of not losing the plug is to insert it into the rectum.
Also remember to lubricate the lower torso and legs of the fetus

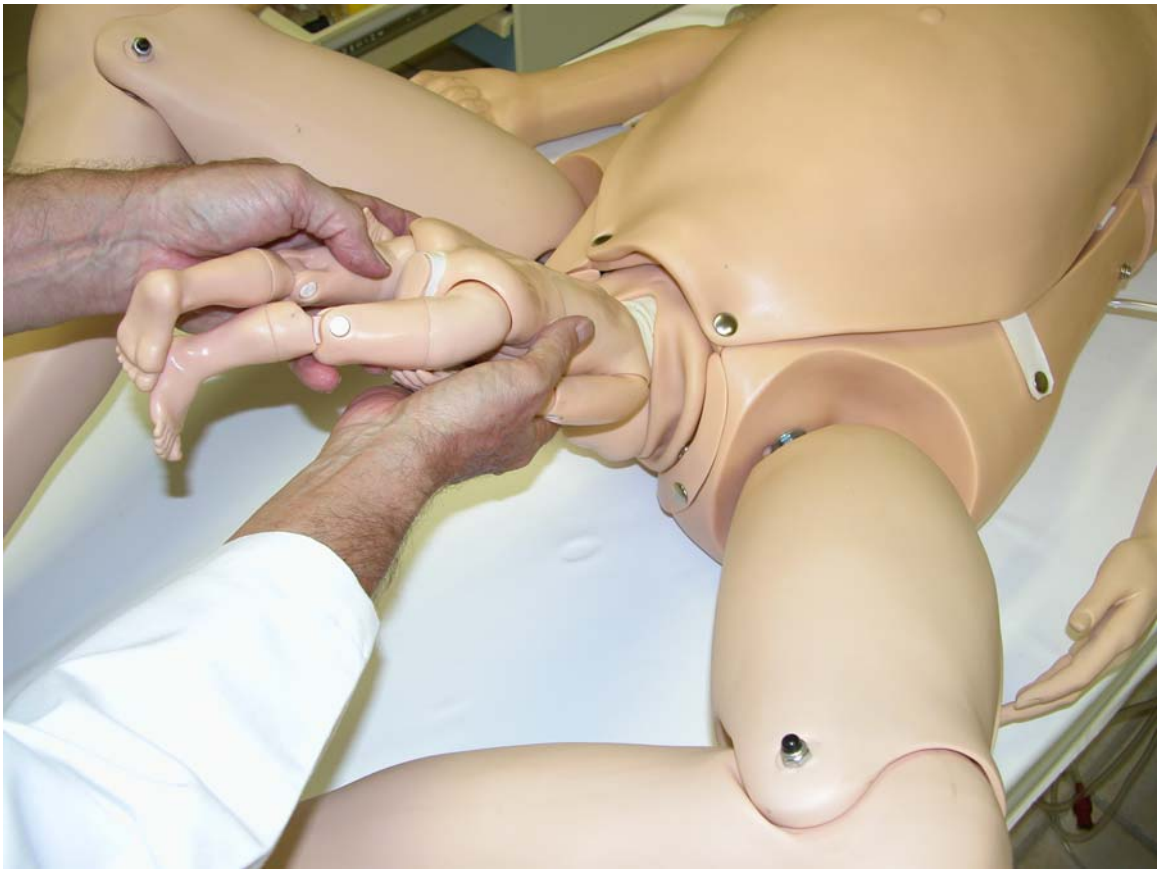
Attach the fetal head to the birthing mechanism using one or two adapters



Assisting a frank delivery



The Pinard or leg-flip maneuver frees one leg then another.
The fetal arms may also require a similar maneuver during delivery.



The fetal arms are delivered and the fetus rotated anteriorly to birth the head.

Delivery of the Placenta

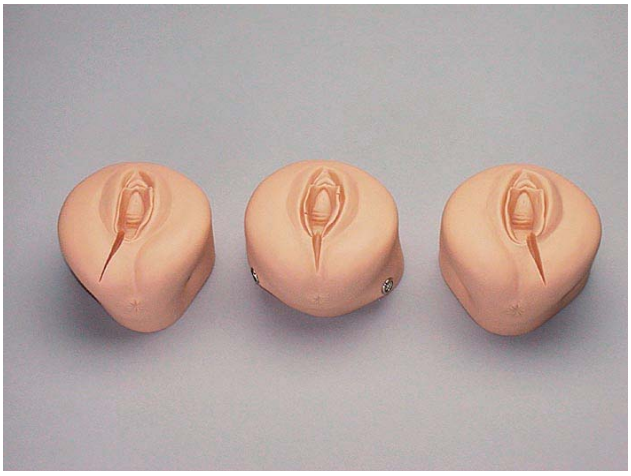
The placenta supplied with NOELLE may be positioned so that it births spontaneously or requires either modest cord traction or manual removal. In addition, note that the placenta is designed with two removable placental fragments. These fragments are attached to the body of the placenta with Velcro. You may reverse one or both fragments causing one or both to birth with the placenta or remain affixed to the uterine wall.

Students must carefully inspect the birthed placenta to make sure it is complete and that no fragments remain internally. If retained fragments are noted the student must retrieve them using a gloved hand under appropriate sterile conditions.

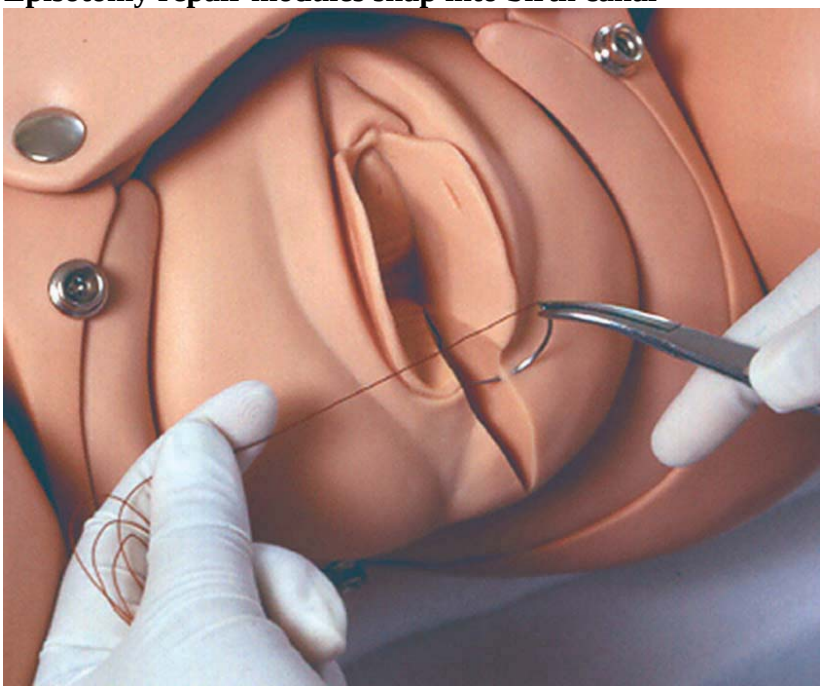
Postpartum Activity

Episotomy Repair

Remove the fully dilated vulva used during delivery and select one of the three episotomy repair modules. Snap a repair module into place. Use a “000” size suture and small curved needle to repair the surgical incision or repair.



Episotomy repair modules snap into birth canal



“000” sized sutures are recommended to extend the life of the repair modules

Section 4 – NOELLE Care and Maintenance

Treat NOELLE and the birthing fetus with care, as you would in a delivery environment.

After use, clean the simulators with a mild detergent or with soap and water. Remove all traces of any lubricant. Do not clean with harsh abrasives. Dry thoroughly.

* Store the simulators in a cool area in the packing carton provided.
* Do not stack or store heavy materials on top of the carton.
* Indelible marks made with ballpoint pens, ink or marker cannot be removed.
* Do not wrap the simulator in newsprint.
* Do not use povidone iodine on the simulator.
* Replacement parts are available from Gaumard Scientific or from your Distributor.

Section 5 – References

NOELLE™ Training Guide with basic and advanced interactive scenarios. Gaumard Scientific Company, Inc. Published 2003. (Instructor and Student Guides available.)

NOELLE™ Perinatal Monitor. Gaumard Scientific Company, 2003

Managing Complications in Pregnancy and Childbirth WHO/RHR/00.7

Myles Textbook for Midwives. Edited by Bennett and Brown

Section 6 – Limited Warranty

Gaumard® Scientific Company (Gaumard) warrants that if the accompanying product proves to be defective in material or workmanship within one (1) year from the date of the original purchase, Gaumard will, at Gaumard's option, either repair or replace same without charge. This limited warranty may be enforced only by the first consumer user. All subsequent purchasers acquire the product "as is" without this limited warranty.

This warranty covers all defects in material or workmanship, except:

1. Damage resulting from accident, misuse, neglect, or from other than normal and ordinary use of the product.
2. Damage resulting from failure to clean or use the product in accordance with the instructions.
3. Damage resulting from repair or attempted repair by anyone other than Gaumard.

When repair is indicated, the user must:

1. Contact Gaumard and request service authorization.
2. At the customer's expense, ship the product with a copy of the bill of sale to Gaumard.

Gaumard disclaims liability for incidental and consequential damages for breach of any express or implied warranty, including any implied warranty of merchantability with respect to this product. This writing constitutes the entire agreement of the parties with respect to the subject matter hereof, no waiver or amendment shall be valid unless in writing signed by Gaumard.

Section 7 – Technical Support

Contact us if you have any questions or if your system requires repair.

Toll Free USA	800-882-6655
Worldwide	305-971-3790
Fax	305-667-6085
e-mail	sima@gaumard.com
Office hours	8:30 a.m. – 4:30 p.m. ET, Monday-Friday
Internet catalog	www.gaumard.com

Gaumard® Scientific Company, Inc.
14700 SW 136 Street
Miami, FL 33196-5691

Section 8 – Common Spare Parts List for NOELLE™ S552

NOELLE

Part #	Description	Price ($US)
550.008	Stomach cover	50.00
550.009	Speaker with cable assembly	25.00
550.010	NOELLE Controller	195.00
550.011	Power supply 100/240VAC; 4 Amps	75.00
550.012	Automatic Birthing Mechanism	595.00
550.013	same as 550.012 but an exchange	200.00
550.014	Four (4) tee nuts to mount Birthing Mechanism	4.00
550.015	Dilating cervices (set of 4)	80.00
550.016	Replaceable vulval inserts (set of 4)	80.00
550.018	Elevating pillow for Leopold maneuvers	75.00
550.019	Placenta with Velcro retainers	25.00
550.020	Umbilical cords and clamps (set of 4)	50.00
550.032	Episiotomy trainer (set of 3)	115.00
550.033	Water based silicone lubricant	5.00
560.029	Abdominal cover for “C” section	100.00

Articulating Fetus

550.017	Articulating baby	225.00