



## **MINIMALLY INVASIVE REPAIR OF PECTUS EXCAVATUM: THE “NUSS PROCEDURE”**

### **What is pectus excavatum?**

It is an abnormal growth of bone and cartilage of the chest wall resulting in a sunken appearance of the chest.

### **Who gets pectus excavatum?**

It occurs in 1:1000 children, but boys get it five times more often than girls.

### **How is pectus excavatum diagnosed?**

Most commonly, you can see the depression in the chest when you look at the child. Often the chest will be uneven in appearance also. Tests are done to check the breathing patterns (pulmonary function tests) and heart function (EKG, echocardiogram). Some centers also do a CT scan of the chest to measure the size of the indentation.

### **How is the decision made that surgery is needed?**

If the child has changes in exercise tolerance, shortness of breath, chest pain or significant body image problems, surgery may be needed. If the breathing or heart tests document changes, this is another indication for surgery. If your child does not meet the criteria for surgical correction, an exercise program may be recommended.

### **What can I expect from surgery?**

Prior to surgery we may ask your child to have a liquid diet and some medicine to cleanse the bowel. In the OR, the chest is measured for a stainless steel bar (“Pectus Bar”) that will be inserted through the chest during surgery. There will be two small incisions; one on each side of the chest. This bar is positioned to elevate the depression in the chest wall and will remain in place for 2 to 3 years.

Post operatively your child will have a small tube that puts pain medicine into the spinal fluid (epidural catheter) for 2 – 3 days. Other medications will be given through the IV, then by mouth. These medications will help to prevent pain, constipation and anxiety and provide muscle relaxation.

Postoperatively, your child will need to take deep breaths using a device called an incentive spirometer every hour while awake, and will be awakened every two hours during sleep. This is very important to prevent respiratory congestion or pneumonia.

Positioning may be a challenge for your child. S/he will need to sleep flat on his/her back with only a small pillow under the head. No one should pull on your child’s arms during

repositioning. Slouching, rolling, side lying, rotation or bending must be avoided. Your child should not attempt to get out of bed or walk without assistance.

**When will my child be able to go home?**

Your child should go home in approximately 4 –6 days.

**How much time should I plan off of work?**

Your child will be at home for 3 – 4 weeks. Planning for home care should be done accordingly.

**What kind of care is needed at home after surgery?**

*Care of the incisions:* Wash with mild soap and water only. No ointments or creams are needed.

*Activity limitations:* Daily walking and breathing exercises are expected. Heavy lifting and use of back-packs must be avoided for three months.

*Diet:* His/her normal diet. Increase fluids/fruits and vegetables to prevent constipation.

*Bathing:* May shower.

*Medication:* Ibuprofen should be given every 6 hours, around the clock, for several weeks. This will relieve pain and act as an anti-inflammatory medication. Zantac is ordered every 8 hours while your child is on Ibuprofen around the clock. This will protect the stomach from irritation. Narcotic analgesia (Percocet) should be no more often than every four to six hours after one week at home. Muscle relaxants (Valium, Robaxin) should be twice daily after the first few days at home.

*Constipation* is a common problem when narcotic medications are used on a frequent basis. Milk of Magnesia or Colace can be given to prevent hard stools that will be difficult to pass.

**What should I call the surgery team for?**

Any increased chest pain, difficulty breathing, fever, redness or swelling at the incision sites, accidental trauma to the chest, or any problems or concerns.

**When can my child return to school?**

Your child can return to school in four weeks. Narcotic medications should be completely discontinued before return to school. No back packs for 3 months. Ask for a second set of books for home! Possibly leave the classroom 5 minutes before the bell rings to avoid jostling in the hallways.

**Will I need a note to excuse him/her from PE?**

Yes. No strenuous activity in gym is permitted for three months. Light activity can occur after 6 weeks.

**Are there limitations on sports activities?**

Yes. No sports until cleared by the surgeon. Usually, aerobic training can start in two months. Competing in non-contact sports can start after three months but football, hockey, kick boxing, soccer and rugby are not recommended at all.

**What are the long-term consequences?**

The bar will stay in place for 2 – 4 years. After removal, continuing an exercise program is important. A certified physical therapist can help with proper, safe training.

During that time, any trauma to the chest should be reported to the surgeon immediately.  
If CPR is needed, increased force must be used  
In rare cases, pectus excavatum can recur.

**Is there anything else I need to know to care for my child?**

Follow up with pulmonary function testing will occur at six months post operatively.  
Your child should order and wear a Medic Alert® bracelet to signify that s/he has a pectus bar in place. This company can be reached by calling: 1—888-633-4298 or on line:  
[www.medicalert.org](http://www.medicalert.org).

Your child may go through metal detectors but will likely set off the alarm. You should carry written documentation about the bar along with the Medic Alert® bracelet to avoid problems. MRIs may be done after three months, but the scan may not be as clear as necessary due to the bar.

*Please reproduce and distribute this sheet to your surgery families. This teaching sheet can also be downloaded at [www.APSNA.org](http://www.APSNA.org).*

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