

Family Education Sheet

Non-operative management of pectus excavatum: the Eckart Klobe Vacuum Bell



Boston Children's Hospital

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This sheet explains the condition pectus excavatum and how to manage it with an Eckart Klobe Vacuum Bell.

Key points

- Pectus excavatum is a sunken area in the chest and lower ribcage.
- It can be treated without surgery by using a device called a vacuum bell.
- The vacuum bell fits onto the chest by suction and is used every day for a set amount of time.

What is pectus excavatum?

Pectus excavatum is when the breastbone is sunken into the chest. It's thought to be caused by an overgrowth of costal cartilage (ribs) in the chest wall. These ribs are longer than normal, and they push the sternum (breastbone) backward.

Pectus excavatum can be seen at birth or can start to happen later in life during growth spurts.

How is pectus excavatum treated?

Depending on how severe the chest wall depression is, a surgical procedure may be necessary

- We offer 2 different kinds of operations for pectus excavatum. Both operations place a metal bar behind the breastbone to correct the depression.
- We also offer a way to correct the depression that doesn't use surgery using a vacuum bell device. It's used for people who have a mild, less severe chest wall depression or for children too young for surgery.

What is the vacuum bell?

- The vacuum bell is a device placed on the outside of the body that creates a suction to lift your child's breastbone forward over time.
- Your child can wear the device during regular daily activities.
- It works similarly to the way that braces work for teeth.
- People who use it notice improvement within the first 3 months.

How does my child get a vacuum bell?

1. You and your child will come into the clinic to meet with one of our nurse practitioners or doctors. We'll examine the chest wall.
2. We'll take pictures so we can track your child's progress.

3. We'll measure the length and depth of your child's chest wall depression. We will try out a few different vacuum bells to see which one fits the best.
4. We'll fill out the paperwork for you to send directly to the Eckart Klobe Vacuum Bell company when we



Vacuum bell devices by size

decide which bell fits best. This company is based in Germany, and all ordering and communication are done directly between you and the company. You will send your child's paperwork to webmaster@trichterbrust.de. It usually takes 3-4 weeks for the vacuum bell to arrive.

Unfortunately, insurance does not cover the vacuum bell at this time. All costs will need to be covered by your family.

What makes the vacuum bell likely to be successful?

- Starting to use it at age 11 or younger
- Chest wall flexibility
- Using it for a year or longer

The results of the vacuum bell are different from patient to patient. Not every child with pectus excavatum will be a candidate (a good choice) for the vacuum bell.

How do I use the vacuum bell?

- Make sure that the valve is in the closed position (turned all the way to the right).
- Place the device on your child's chest wall so the depression is in the middle of the device.
- Press firmly on the chest and make sure there are no gaps between the skin and the device.
- Start with 1 full squeeze of the pump and stop once you feel tension (pulling or pressure). The tension



should not be painful and should not affect your child's breathing. Keep adding pumps to get to the suction level that your health care provider has directed. This is usually 2-3 pumps when starting therapy.

- It's important **only to use the recommended number of pumps** directed by the surgical team.
- The vacuum bell will suction to the chest wall once you've reached the right number of pumps. Your child can now move about normally.

How long should my child wear the device?

- Start with 30 minutes, twice a day. You can add 15 minutes to this time each week if your child is comfortable with this. You can make your way up to 120 minutes (2 hours) twice a day at most.
- It will take about 6 weeks to reach the maximum wear time of 120 minutes, twice a day.

Please call the Surgery Clinic to schedule an office visit once your child has reached this maximum wear time. At this visit, we'll discuss long-term expectations and recommendations for continued use.

What are the common side effects of wearing the device?

Some side effects include:

- Bruising
- Aching of the chest and back muscles
- Redness and skin/nipple irritation
- Flabby skin

Please call the General Surgery Clinic if your child has any side effects. You may have to make adjustments to the amount of time the device is used. **If your child has side effects**, start by reducing how long they wear or using fewer pumps until the symptoms get better.

Note: The brace should not be worn if your child has a history of osteogenesis imperfecta, cases of angiopathy, coagulation dysfunction and/or current bone fractures.

How should I care for the vacuum bell?

Use a soft cloth that's damp with soap and water. You can also use isopropyl alcohol to clean the device. Be careful with other disinfectants because they may make the view glass blurry.

Contact us

Please call our Surgical Clinic at any time with any questions or concerns:

Monday – Friday, 8:00 a.m. to 6:00

p.m.: Call the Nurse Practitioners' Line at 617-355-7716.

After 6:00 p.m. on weekdays and on weekends and holidays: Call the hospital page operator at 617-355-7800 and ask to speak with the surgeon on call.