

General information about the Rapid Maxillary Expander

The image at the right shows the type of rapid palatal or Maxillary expander (RME) that I use on a model. This appliance is also called a "Hyrax" appliance. It consists of a screw that is attached to the teeth by means of bands that go around your back teeth. In order to fit you for this appliance, we usually need three visits:

- 1) A quick (five minutes) visit to put spacers between the teeth that will have bands on them,
- 2) About 1 week later we see you for a 15 minute visit to fit bands around the two or four teeth and take an impression of your teeth while the bands are on. I will then remove the bands and replace the spacers.
- 3) Next visit we fit the expander and also the braces on the other teeth as needed, and give you instructions.

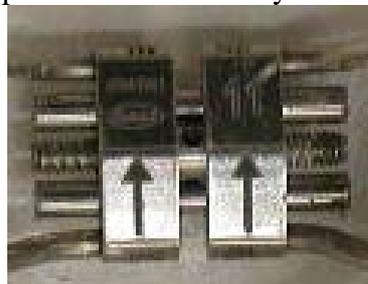


The expander is "activated" by turning the screw. This is done with a "key".

You can then hold the key between your index finger and thumb. At this point you should have your child

lay on his or her back with his or her head hanging over the end of a bed or couch. This works best where there is adequate lighting, such as near an end table or lamp. You should also have your child open his or her mouth as wide as possible since this makes it easier for you to see what you are doing, and the gag reflex may be evoked by touching the back of the tongue, and keeping the mouth open very wide minimizes the possibility that you will touch this area while turning the screw.

The key is placed in a hole at the centre of the screw. The key has a kink in it that stops you pushing the key in too far and touching the roof of the mouth. You can see arrows on the screw indicating the direction that the screw needs to be turned to activate it (towards the back of your mouth). The number 11 on this screw means that it can be opened a maximum of 11mm, however this is only the maximum guide, and not the actual amount of expansion that we always need.



The key is then pushed as far back towards the back of the mouth as possible. You will feel resistance when the screw cannot be turned any more. You will also be able to see a new hole appear in front of the key for the next activation. To remove the key, you need to push down and back until the key falls out of the hole. It is very important that you do not wind back the screw while you are removing the key. If you do turn back the screw, the next hole at the front of the screw will be obstructed, and you will not be able to insert the key for the next activation.

I will turn the screw once while demonstrating the above, and then you, the parent will also turn the screw once, for a total of two turns at the visit that I fit the expander. Unless I instruct you otherwise, you will then turn the screw once starting the following morning, and once at night (two turns per day only, normally only for the first two weeks and then stop.).

What should I expect?

When I put the expander on, it is sometimes uncomfortable until I get it all the way on your teeth. When I turn the screw the first time, you will feel a mild pushing against your teeth. When your parent turns the screw (the second turn) it will feel uncomfortable. It usually doesn't hurt, but you will feel a strong sensation of pushing against your teeth. Over the next 2-3 days, as the screw is being turned, you will feel an uncomfortable pushing feeling. However, once the sutures are opening freely after the first few days, you shouldn't feel anything at all as the screw is turned.

It is very important that you follow the turning schedule that has been prescribed. If, because it is painful, you decide not to turn for a few days and then start up again, this will lengthen the amount of time you are in pain and it may result in damage to the supporting structures of the teeth. If you do experience pain, please take whatever you usually take for a headache.

- ✚ **You may feel the initial pressure on your teeth, in the middle of your palate, in your nose, in your cheeks, and you may experience a headache.**

- ✚ **You should expect to see a huge space open between your upper front teeth.** Although this is a good sign from the standpoint that this means the two halves of your palate are separating as they are supposed to, it can also be disheartening from a cosmetic standpoint. By the time you stop turning the screw, the space may look so large that you could fit another tooth in there. After you stop turning the screw, the space will close all by itself within a month or so. In fact the space may close so much that the two front teeth may cross over and overlap slightly. This will be controlled by the braces and is a normal reaction to the expander.

- ✚ Since the upper jaw is being widened, and the upper jaw is attached to your cheek bones, **you may expect some change in facial appearance.** Whether or not you notice any increase in width of the face depends on many factors, including the thickness of the muscle, fat and skin in the area (changes will be more pronounced in people who have thin tissue), and the amount that the palate is being widened.

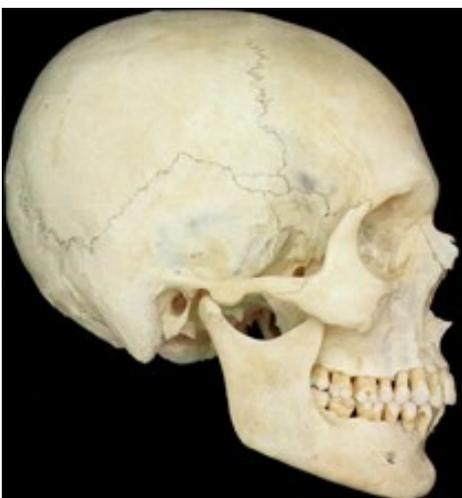
- ✚ **You may notice an increased width in the area of the bridge of the nose** (your nose may look wider). The amount that the width increases depends on how readily the sutures that connect the upper jaw to your nose bones separate; and the change in width is usually not noticeable.

- ✚ **You may find it easier to breathe through your nose.** Since your palate is also the floor of your nose, increasing the width of the palate also increases the size of the nasal chamber, and may enable you to breathe more freely through your nose. Anecdotally, many of my patients have reported that they can breathe easier through their nose after they have undergone rapid palatal expansion. Please note that palatal expansion is not specifically indicated to help someone with nasal breathing problems. If the palate is expanded in the absence of a width coordination problem, this will lead to a bite that doesn't fit together. This may make it difficult if not impossible to chew correctly, and will most likely cause damage to your teeth and gums.

- ✚ **Your bite will feel off** as the width of your palate changes. On their way to being the correct width, the teeth will not fit together properly, and this is a normal feeling.

How does it work?

This function of this appliance is to widen the upper jaw itself. In order for this to happen, your upper jaw must **not** be rigidly attached to the rest of your skull. If the sutures that attach your upper jaw to the rest of your skull are still open (in females up to 17 – 18 year of age or so, and in males up to 17 years of age or so), this appliance will be able to widen the jaw itself. In adults a similar affect can be achieved using a combined surgical approach plus the RME, which will work quite effectively at any age. This is called a SAME or else a Surgically Assisted Maxillary Expansion.



The squiggly lines that separate the bones of the skull are called sutures.

If your sutures have already fused, this appliance can only widen the upper jaw if you have had surgery to separate your upper jaw from your skull in key areas. This is called a SAME technique, and works very well in adults with very narrow palates.



This is the upper jaw viewed from underneath. You can see the suture that separates both halves of the upper jaw. This is the suture that opens (and subsequently fills in with new bone) when an RME is used.

In order for teeth to move through the bone, the level of force applied to the teeth must be in a certain "biologic range." If the force level is too low, the teeth will not move. If the force level is too high, the teeth will not move. The way this appliance expands the upper jaw despite the fact that it is attached to teeth, is that the force levels generated by the appliance are too high — they are well above the biologic range for tooth movement. The forces are transmitted through the teeth to the bone, and assuming your upper jaw is not rigidly attached to the rest of your skull, this causes the bones to widen.

If your jaw **is** rigidly attached to the rest of your skull, your upper jaw can't widen. In this case, the teeth still move, but not biologically. The only way for the teeth to move under this circumstance is by the bone on the outside surface of the teeth fracturing. This is why we only use this in teenagers as we know things will move, and in adults they will require the surgical option.