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Thoracic Surgical OPERATIONS

(Information FOR PATIENTS, written in plain words)

Kinds of Thoracic Surgical Ops

Thoracic surgical Operations are carried out whenever they are **indicated** either for **diagnostic exploration** (to find out, to diagnose) or for **treating** some diseases, that affect the organs located inside the "thorax" (Chest cavity).

Organs located inside the thorax are: the Lung, the Oesophagus (or "gullet" or esophagus), all structures consisting the "Chest Wall" (ribs, muscles and the parietal "pleura," that is a membrane lining internally the chest cavity) and all structures consisting the "Mediastinum" (space in the middle between the right and the left half of the thorax, where the **heart**, **lymph glands**, residues of the **thymus** gland etc are located).

Standard thoracic surgical Operations (or "procedures), often carried out in the everyday clinical practice, include the following ones:

- **Biopsies** of Lung, Pleura or mediastinal Lymph Nodes
- **Curative Resections** ("removals") of pulmonary tissue for treating benign or malignant lung tumours (incl. Lung cancer) **or Resections** for taking out Secondary Deposits to the Lungs, originated from tumours elsewhere:
 - **Pneumonectomy** (taking out wholly one entire lung)
 - **Lobectomy** (taking out one "**lobe**" or part of the lung. The right lung consists of 3 lobes and the left one of 2).
 - **Bilobectomy** (taking out two lobes together in one piece, right-sided only)
 - **Wedge Resection** (taking out a very small part of the lung, shaped like a wedge)
 - Anatomical **Segmentectomy** (taking out the smallest possibly removable anatomical part of a lung)
- Resections of emphysematous "**blebs**" & "**bullae**" (air-filled cysts of the Lungs) and of the parietal pleura for treating recurrent or persistent spontaneous **Pneumothorax** ("collapsed Lung")
- Resections of **Mediastinal** tumours or of **Chest Wall** tumours
- **Exploratory** thoracotomies
- **Anti-reflux** procedures (Ops for treating Gastro-oesophageal Reflux and oesophagitis as in hiatal hernia cases: the "**Belsey Mark IV** fundoplication" etc.)
- **Oesophago-gastrectomies** (taking out the Oesophagus along with part of the stomach for **oesophageal cancer**) etc.

Exposure or Incisions

There are 2 ways of exposure of the thoracic organs for operating then on them:

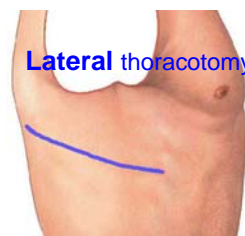
- **The "open" exposure**, that is the Exposure through an "incision" or a "**cut**" to the chest wall. All thoracic surgical operations are technically feasible to be carried out through an open exposure.
- **The thoracoscopic or "VATS" exposure**, that is the exposure obtained by watching a monitor, receiving video images from a thin camera inserted inside the patient's chest cavity. Similarly thin surgical instruments are

inserted through small “**holes**” of the chest wall, usually 3 holes (number of holes between 1 & 4). It is also called “**keyhole surgery**” or V.A.T.S. (**V**ideo-**A**ssisted **T**horacoscopic **S**urgery). Quite many thoracic surgical operations can technically be carried out thoracoscopically.

The vast majority (almost 80%) of all open thoracic surgical operations are carried out through a “**thoracotomy**.” Thoracotomy is an incision located at the Side of the chest (either right or left side), below the “axilla” (armpit, underarm), in between two ribs and parallel to them. A thoracotomy may be “mini,” “limited,” “muscle-sparing,” “lateral,” “posterolateral,” “anterior,” “anterolateral” or “extended” depending on the varying surgical Goal to be achieved in different individual cases.

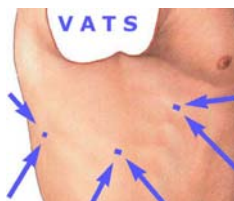


I undertake almost all open minor / diagnostic operations through a “**mini**” muscle-sparing thoracotomy (figure above-right). The very same incision can also be called “axillary thoracotomy,” when it is undertaken higher up, immediately below the axilla. I also use this exposure for treating recurrent or persistent spontaneous **Pneumothorax** cases. The cosmetic advantage of this exposure is the fact that the final scar is fully covered by the patient’s arm almost at all times during naked-chest ordinary social activities (such as walking by the sea side).



More demanding operations are usually performed through a “**lateral**” thoracotomy. It is only rarely that this incision needs to be *posteriorly* extended (towards the patient’s back) during the operation.

A thoracoscopic or **VATS** exposure is attempted whenever this is technically feasible by means of necessary equipment and whenever it is unbiased assessed “safe” to do so. VATS is more often carried out for diagnostic operations.



Finally, there are other exposures, less often used, such as: “anterior mediastinotomy,” “median sternotomy,” “thoracolaparotomy” (or “thoracoabdominal exposure”), “clamshell” & semi-clamshell incision, the “Dartevelle Exposure” etc.

Predicted post-op Respiratory Function

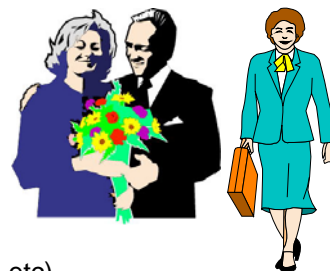
People are often worried that they will not be able to breathe properly if their lung has been removed. **This is not so!**

It is quite possible to breathe normally with even only one lung, if hypothetically one entire lung had surgically been removed. Of course, lesser operations are expected to cause even smaller difficulty in breathing: negligible difficulty or none at all.

Some people, however, who had breathing difficulties before the operation, may be more breathless afterwards.

That is why I always ask for pre-op breathing tests (respiratory function tests, arterial blood gases etc), to objectively measure how well your lungs work and to have this measurement quantified. On the basis of these unbiased measurements I have to decide whether or not an operation is right for you, so that I can or cannot recommend it to you for a consent.

After completion of both **full** recovery and convalescence a **post Pneumonectomy** patient is able to reassume all his pre-op **social activities only**. Social activities include: to be out of bed during the day, to keep on moving, walking, to get dressed and get out of the house to go shopping or walking outdoors, to swim leisurely and unhurried and also to regain full capability of maintaining adults' interpersonal relationships as *potent* again for intimate intercourses etc. A post-pneumonectomy patient cannot usually take up any of his pre-op sporting / athletic activities (such as jogging etc).



After completion of both **full** recovery and convalescence **post Any Other thoracic Op** a patient is able to reassume both:

- All his pre-op social activities normally (meaning of social activities already defined above)
- Many of his pre-op sporting / athletic activities (such as athletic Swimming, Jogging etc). His performance, however, is expected somehow lower than his own pre-op records.

Such a perfect functional rehabilitation can take place post-operatively because any residual pulmonary lobe(s), left post-op inside the operated side of the chest, does **over-expand**. So it manages to be over-dilated (as it is air-filled) post any pulmonary resection (other than pneumonectomy). This over-expansion results into the fact that the residual pulmonary tissue can have enough room to accommodate almost as much of inhaled air capacity as the pre-op whole lung did.



Risks & Benefits involved

Before any thoracic operation you may need to have further tests to assess your ability to cope with the surgery. The respiratory function tests alone may not be enough, depending on your past medical history and overall status.

Before any thoracic surgical Op, please **make sure** that you have discussed it fully with myself personally (or with whoever your own attending surgeon is) so that you **fully understand** what expected Benefits (diagnostic or therapeutic ones) and what calculated Risks it involves. This discussion usually takes place immediately prior to your signing of the “**Informed Consent**” form.

Risks of severe complications are inherent to and involved by Any surgical procedure and also by any medical Act or treatment in general. There are even risks threatening the patient's very Life itself. This is the reason why every doctor feels such a heavy Responsibility when he is finally found in the position to balance any expected **Benefits** over the calculated **Risks** in each and every individual patient's case for his own unbiased, justified decision-making:



- Either **to recommend Surgery** (for treatment or for diagnostic exploration) undoubtedly as the responsible attending surgeon
- Or **to be reserved**.

Your FIRST days post-op

It may take a few days (3 – 6) up to many weeks (1 – 6) to recover fully from a thoracic surgical Op, although some people recover more quickly than others. This is the reason why no-one can accurately predict for sure how long it will take some individual patient to recover fully. **There are** things **you** can do to **speed up** your recovery:

After your operation you will be encouraged to start **moving** about and **walking** as soon as possible. Usually this “mobilisation” takes place on the very same day that you were operated on (in the evening of this day). This is an essential part of your recovery. Even if you have to stay in bed, it is important to keep up regular leg **movements** to help your blood circulation and prevent clots.

The medical, nursing and physiotherapy staff will regularly visit you on the ward to help you with getting out of bed, with walking and with your breathing exercises to prevent chest infections, atelectasis (lung collapse because of sputum retention) and other complications like blood clots.

By saying breathing exercises, I mean All of the following together:

- Deep breaths regularly throughout the day.
- Courageous expectoration, that is coughing up strong enough to have all sputum removed out and away from the airways, despite some mild ache / discomfort during every coughing attempt.
- Use of a Triflow. Triflow is a simplest plastic disposable device (photos below), designed, manufactured, intended and applied for **strengthening** up the inhalational force of patients post-op. These instructions of use apply:
 - One must take a “good,” **deep**, strongest breath in once every 15 – 20 minuts, trying hard to raise **all three** balls up, if possible.
 - The goal mentioned above is first achieved, **then** the patient attempts to keep all 3 balls Up as **Long** as possible. In other words, the patients tries to **prolong** the duration of breathing in as long as he / she possibly can
 - **Inhalation alone** is exercised, or “breathing In” only.
 - One must **never** exercise strong exhalations with the triflow. It is a mistake to breathe Out strongly (although often done in Thessaloniki recently), because:
 - Such “strong exhalations” could cause collapse of the alveoli and consequent “atelectasis” especially if more factors are also present (as they often are in case of patients immediately post-op)
 - The Goal to achieve is to strengthen the respiratory muscles, so that they be able to perform better; these muscles’ only job required is during inhalation alone. Breathing In is the only active phase of every normal Respiration Cycle (on the contrary, breathing Out passively occurs in every Respiration Cycle, exhalation is a passive phase of that cycle).

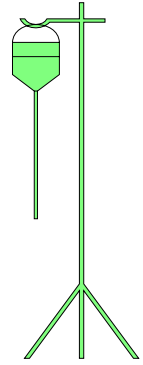


X-rays will be taken regularly to make sure your lungs are working properly.



Drips & Drains

A **drip** (intravenous infusion) will be used to give you fluids for a couple of days, until you are again fully able to eat and drink normally. I stop administering IV infusions to my patients early. One of the many reasons for doing so is to facilitate your getting out of bed and your walking post-op as much as possible; this is imperative for speeding up your recovery. You must, however, *remember to drink* adequate amounts of fluids to be hydrated, as much as you feel that you need whenever you feel thirsty (all kinds of fluids are post-op allowed orally with the only exceptions of carbonated / gaseous beverages and alcohol).



You will also have one drainage tube (rarely two tubes) in your wound. This is usually taken out about 2–7 days after your operation, depending on your recovery; the maximum duration of keeping the **chest drain** in is 15 days and that is rarely needed. The wound will usually be around the side of your chest between two ribs. This will be covered by a dressing for the first 5 – 7 days.

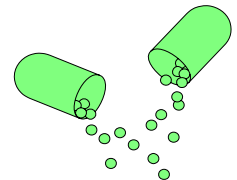
Post-op Pain

It is rather expected or it is “quite normal” to have some mild pain or discomfort after your operation in any case.

The post-op pain will definitely be **numbed** anyway, because of a technique that I apply just prior to closure of all thoracotomies, that I carry out. This technique is called “Intercostal Nerves’ Block” and its pain-numbing result usually lasts for the first 5 days post-op or so (from 3 to 7 days).

The post-op pain cannot be completely vanished by some miracle, however it is controlled by painkillers and other medication (“analgesia” & “non-steroid anti-inflammatory drugs” along with “proton-pump inhibitors”).

Some of the painkillers are given regularly at pre-set time intervals, as “baseline-analgesia,” even if you happen not to feel sore at that specific moments.



Other painkillers are supposed to be given in addition to the regular ones only if and when the patient complains of pain.

So, let your doctor or the doctor on-call or one of the nurses know, if you have any pain, so they can treat it as soon as possible.

Mild discomfort, or pain, in your chest can last for several weeks and you will be given some painkilling tablets to take home with you.

Finally, any wound (either resulting from surgery or from injuries etc) can often become the centre or focus of some long-term “sensitivity” or mildest “discomfort.” For instance the old wound area may give you a warning of humid / moist weather or an accurate prediction of forthcoming rainfalls by some sort of mild “needles & pricks” sensation. This is a well-known possibility and it is so Unimportant, that it never requires any medication at all and it never causes any worry to the patient

Discharge – Going home

You will probably be ready to be ready to “be discharged” or to go home about 5–11 days after your operation. If you think that you might have problems when you go home – for example, if you live alone, or have several flights of stairs to climb – let me know when you are admitted to the ward: I can arrange for a social worker to address this problem.

When you go home, it will be **imperative** that you **exercise** gently to build up your strength and fitness and also to achieve over-expansion of any residual lung tissue left after a possible major pulmonary resection. It is a good idea to check with me which kind of exercise would be suitable for you. Walking and swimming are good exercises that are suitable for most people after surgery to their chest.



Specific instructions in detail are given to each and every individual patient of mine post-op and they are clearly written in my “**Discharge Report**,” last paragraph “**Instructions / medication upon discharge**.” Here are some routine and *standard* instructions for all post-op patients:

- Avoid exposing the surgical wound or scar to **sunlight** or **ultraviolet** radiation (solarium) for the first year post-op in order to achieve a better cosmetic final result.
- Observe **full**, adequate and balanced **feeding**, *rich in proteins* for the first 2 months post-op. Try to **increase the protein intake** by all available means. Slimming diets are absolutely forbidden for the first 2 months post-op. Sources of high biological valued proteins are: meat (not only **animals’** meat, but also chickens’, turkeys’, ostrich and **poultry** in general as well as **fish**, too), the egg’s white, soy, milk, cheese etc. The lack of proteins disturbs, impedes, delays and prolongs the wound’s healing process and it can also act as a factor leading towards fatal pulmonary oedema in cases of patients who underwent major pulmonary resection (low proteins’ concentration in the blood’s serum \Rightarrow low colloid osmotic pressure at the same time with increased or even doubled blood flow to the residual lung left, therefore, with increased pulmonary circulation pressure).
- Aerobic exercise is an absolute Must for the first 2 months post-op: rapid Walking up or down the hills, lasting for 1 hour at least, jogging, unhurried swimming etc.

Out-Patient’s Appointment

Every single patient should best be seen at least once again as an Out-Patient by his **own attending surgeon himself** or at least by a colleague of the same hospital’s Department. This way all accurate technical details of the operation carried out, histology diagnosis etc are readily available and misunderstandings are avoided. I usually suggest that an outpatient’s appointment be arranged in two weeks’ time post discharge home.

During that outpatient’s consultation, all of the following can take place:

- The **thoracostomy sutures** and any other non-absorbable sutures can be **removed** (thoracostomy is the **hole** through which the post-op chest drain was inserted into the chest)
- The **Histopathology Report** or “**biopsy Report**” can be made available, in case it had been pending before and up to the very date of discharge home. On the basis of the histopathology diagnosis the whole decision-making can be modified as much as further follow-up or even Treatment is concerned: for

instance, “complimentary” treatment may be considered necessary post-op according to some histopathology diagnoses as soon as they come to light.

- The patient can be clinically **examined** and x-rayed.
- Any of the patient’s own or any of his relatives’ unanswered **questions** and wonders can now be asked about to the attending surgeon.
- A definite timetable or schedule of regular **follow-up** appointments can now be set or recommended, if necessary. For instance an Outpatient’s appointment every 3 or 4 months until completing 5 years post-op for lung cancer cases, or once every year for 5 years for benign tumours or other cases etc.



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