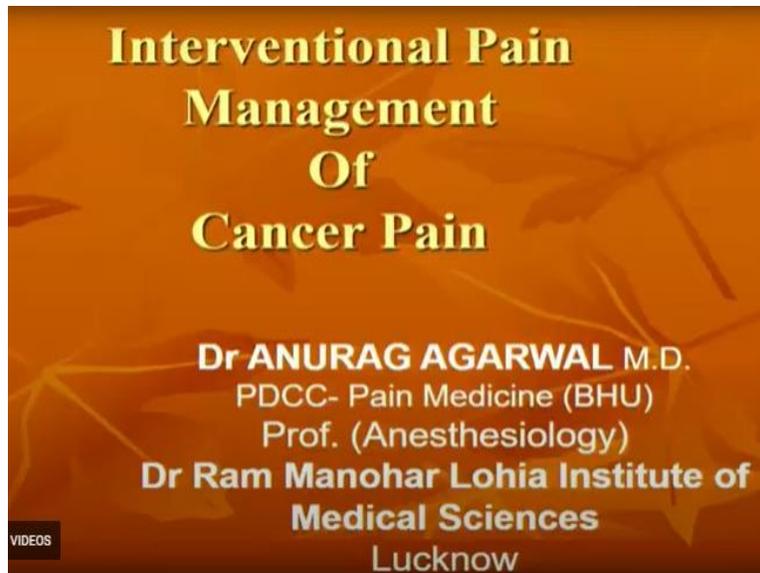


Basic Certificate in Palliative Care
Dr. Geeta Joshi
Dr. Piyush Gupta
Dr. Col. Yashavant Joshi
International Institute of Distance Learning
Indian Institute of Technology, Kanpur

Week-07

Lecture 06: Introduction to Intervention Pain Management

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Namaskar (Hindi word meaning greetings), this is Dr. Anurag Agrawal and today we are going to talk about the cancer pain and its interventional pain management through the means of MIPS that is minimally invasive pain and spine interventions of pain medicine.

A new super specialty emerging super specialty of anesthesiology, but deals exclusively with the chronic pain syndromes of all kind including the cancer pain.

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DR. ANURAG AGARWAL

- **Present Designation:** 'Pain Physician' & Professor
- **Place of Work:** Dept. of Anesthesiology,
Dr Ram Manohar Lohia Institute of Medical Institute, Lucknow U.P., India
- **Education:** M.B.B.S., M.D. (Anaesthesiology); P.D.C.C.- Pain Medicine(B.H.U.),
- **Publications:** 35 in National/ International Journals
- **Areas of Interest:** interventional Pain & Spine Medicine, Spine Endoscopy
- **Vice President-** NAPCAIM UP Chapter
- **Founder President-** ESIPS (Endoscopic Spine & Interventional Pain Society)
- **Member, Pain Medicine Board, NBEMS, India**
- **Member- Cancer Aid Society Ethics Committee.**

MORE VIDEOS

So, I am working at a pain physician and professor in anesthesiology department at Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow, Uttar Pradesh, Bharat. I have done my MBBS from GSVM Kanpur and MD anesthesiology from SNMC Agra as well as PDCC course in pain medicine from Banaras Hindu University.

My area of interest is interventional pain and spine medicine as well as the Percutaneous endoscopic spine. I am vice president of NAPCAIM, UP chapter. Also the founder president of ESIPs that is the first endoscopic spine and interventional pain society of India. I am a member of pain medicine board of the national board of examinations for medical sciences NBEMS a government of India autonomous statutory body and I am a member of cancer aid society ethics committee. Also, I am the secretary of Indian society of pain clinicians and this is Indian society of pain clinicians is the body of formally trained pain physicians in India who has done at least PDCC or FNB or DM pain medicine course.

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DISCLAIMER

- No financial relationships with any manufacturing companies or pharmaceutical companies
- Consent have been taken from patients to use their photos/videos for academic purposes
- Mention of any trade names is purely for the sake of clarification and simplicity

So, to disclaimer I have no financial relationship with any manufacturing company or pharmaceutical company. Consent have been taken from the patient to use their photos and videos for the academic purposes only and mention of trade name is purely for the sake of clarification and simplicity to understand.

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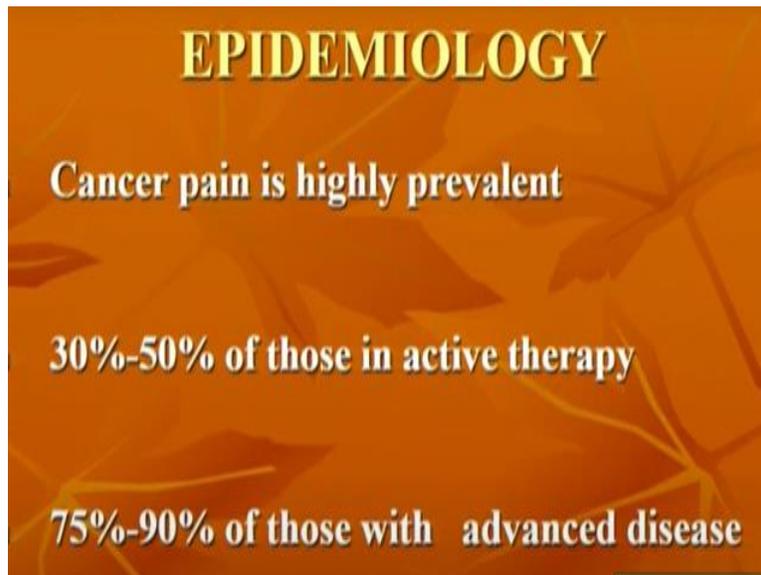
ETIOLOGY OF CANCER PAIN

- **Pain resulting from neoplastic processes are divided into *three categories*:**
 1. **Pain caused by the tumour**
 - Visceral pain
 - Somatic pain
 - Neuropathic pain
 2. **Caused by the cancer therapy**
 - Postsurgical
 - Due to Chemotherapy
 - Postradiation
 3. **Pain that is unrelated to cancer.**

So, to etiology of cancer pain as we know that incidence of cancer pain is up to 90 percent in the patients who are surviving with the advanced stages of cancer. So, there

can be multiple causes it can be because of the cancer itself which may result in the visceral pain, somatic pain or neuropathic pain. It can be caused by the cancer pain which is post surgical or due to the chemotherapy or due to the radiation therapy of the cancer treatment and then there can be patients who have pain because of the conditions causes unrelated to cancer. Like a patient of cancer can also have a prolapse into a vertebral disc which may demand their treatment.

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So, cancer pain is highly prevalent 30 to 50 percent of patients of cancer who are in the active therapy they experience chronic unrelenting severe pain which needs to be managed and up to 90 percent of patients who are in the advanced diseases where the curative therapies are over or are not working they are in the chronic severe intractable pain which must be addressed to enhance the quality of life to preserve the dignity in the end of life and you need to may need to refer this patient to a specialized pain medicine OPD and a pain physician nearby to your place.

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Classification Of Cancer Pain

1. **Somatic- Bone metastases**
2. **Visceral- Pancreatic cancer**
3. **Neuropathic- Plexopathy or post herpetic neuralgia**
4. **Sympathetically maintained- Reflex sympathetic dystrophy**

So, classification of cancer pain can be done into the somatic cancer pain like the pain which have patients are having bone metastasis they have that somatic kind of pain then it can be visceral pain like in the gallbladder cancer or the pancreas cancer.

Then it can be neuropathic pain like in the carcinoma lung involving the brachial plexus or the group of nerves or postherpatic neuralgia and then there can be the reflex sympathetic dystrophy sympathetically mediated pain like it happens in the phantom limb syndromes.

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Types of Cancer Pain

- **Baseline Pain**-Pain reported by pt as the average pain intensity experienced for 12 hr or more during 24 hr period.
- **Breakthrough Pain**-Transient increase in pain to greater than moderate intensity, occurring on a baseline pain of moderate intensity or less.

So, there is a baseline pain as I told you that cancer especially in the advanced condition is not likely to go away. So, when the disease is there pain is also to be there it is not like something acute event like the there is a fracture you fix it and 3 after 3 months pain is gone fracture is healed, but that is unfortunately not the case with the chronic pain conditions like the cancer itself where pain is going to remain.

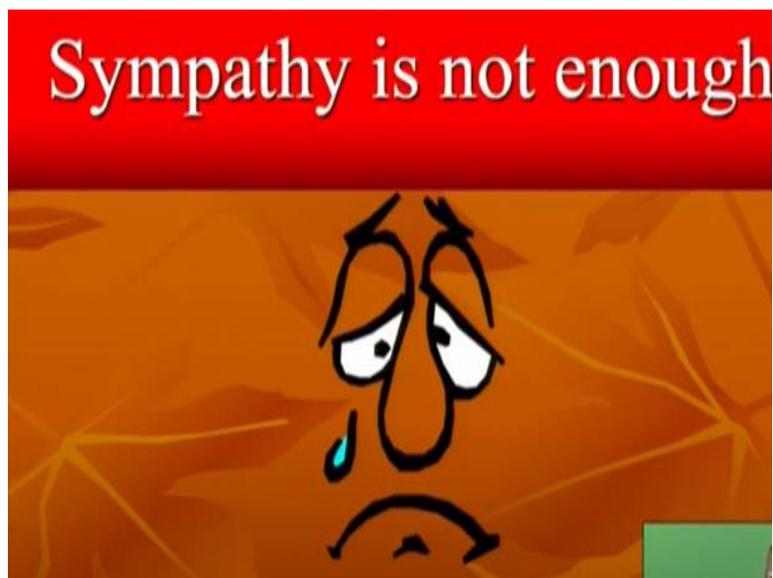
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What can we do ?

So, you need to give a baseline therapy, round the clock therapy to cover the baseline pain and then there can be a pain which is breakthrough in nature which is over and above the baseline pain and which may be related to some activity like the patient of oral cavity can have severe pain while attempting to eat something. Patient of carcinoma rectal canal can have severe pain which is over and above the baseline pain when he tries to defecate.

So, what can we do as a society? What can we do as a medical practitioner? What can we do as a pain physician?

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So, what I can tell you sympathy is not enough just to sympathize oh patient is having so much of pain patient is having that is not going to work we have to do something proactively and what I can tell you what we need to do proactively.

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Assessment

- **Scales:**
 - **Numeric rating scales**
 - **Visual analogue**
 - **Descriptive**
- **Outcome Measure:**
 - **Pain intensity**
 - **Distress**
 - **Relief**
 - **Breakthrough dosing**

So, first thing if you want to address a problem you need to assess the magnitude of the problem and what are the scales available that is the numeric rating scale, visual analog scale or descriptive scale. Like numeric rating scale it is the very simple scale to use the most commonly used by a pain physician to assess the quantity of pain because you ask the patient how much pain you are having on the scale of 0 to 100 or 0 to 10. If the patient says 0 that means, patient is not having any pain if the patient says 100 or 10 on a scale of 0 to 10 patient is having most severe kind of pain and you need to treat it. Then whenever you provide any treatment as a treatment provider you need to find out the outcome measures there is no point of treating a patient if you are not finding out whether it is your working or not your treatment is working or not.

So, what are the scales there are pain intensity scale, again the numeric rating scale or visual analog scale you use you ask the patient after my treatment how much relief you are having what are the signs of distress have they come down what is the relief and what is the breakthrough dosing.

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AIM

- **Optimize Pain Control**
- **Minimize Side Effects, Adverse Outcomes And Costs**
- **Enhance Functional Abilities- Physical And Psychological**
- **Enhance Quality of Life**

So, the aim of any treatment especially in the chronic pain medicine, you need to optimize the pain control, you need to minimize the side effects. Otherwise, what will happen patient is not going to comply with your advice and you need to take care of the cost also and the aim is to increase the functional abilities and to enhance the quality of life.

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MODALITIES OF TREATMENT

- **Pharmacological Approach**
- **Minimally Invasive Pain Interventions (MIPI)**
- **Neurosurgical Interventions**
- **Cryo Analgesia**
- **Long Term Epidural, Implantable Devices, Implantable Pumps**
- **TENS, Acupuncture, Hypnotherapy**

So, what are the modalities of treatment for the cancer pain management pharmacological approaches we have a separate lecture on that you can go through the website to find that lecture, minimally invasive pain intervention MIPSIs and neurosurgical interventions, cryo analgesia, long term epidural, implantable devices we will show you later implantable pumps and then there are other therapies.

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So, there is a ladder of analgesics which was proposed and popularized by the World Health Organization where they suggested to start the treatment of any chronic pain especially the cancer pain with the easiest of available drugs which are available over the counter which are having less side effects less cost and easily admissible and what are these drugs commonly known as brufen, diclofenac, aspirin, paracetamol all these drugs they can be used in the first step of the ladder if the patient is having mild pain. On the scale of 1 to 10 patient is telling that I am my pain is only 2 or 3 then you can start with the first step ladder, but what if the patient says no my pain is 5 which increases up to 7 though that comes in the category of moderate pain and you need to step up your drugs with the non opioids that is NSAIDs that is Brufen or Diclofenac as an example along with some weak opioid drugs. What are the weak opioid commonly used? Codeine and tramadol. in our country and what if the patient says I am having 8 or 10 out of 10 pain I am having the worst kind of pain then you directly go to the third step of the ladder which

includes the prescription of strong opioids like the oral morphine tablets and that is the cheapest and easily prescribable thing, but they are controlled subject.

So, you need to have some center nearby you or you need to refer the patient to get this step 3 ladder, but you should know. Then there was a fourth step which was suggested by later on to include the MIPSI minimally invasive pain and spine interventions at any step of this ladder. If you feel that you can do or you know someone who can do an effective intervention for your patient which may decrease the requirement of opioids in your patient that it is amazing. So, that intervention part can be used and should be used perhaps in most of the patient if the facilities are available a trained pain physician is around and you can refer the patient to get the benefit of this advanced therapy.

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So, what are the interventions I am talking about? So, the target the aim of intervention is to there are two aim one is to delivery of opioids to the CNS.

So, that the dose reduces drastically suppose you are giving oral tablet. So, you need to give a lot of drug in comparison to what you required to give if you are directly delivering it to the spinal cord. So, the dose become drastically reduced if you can able you are able to deliver that drug to directly to the spinal cord where it is going to

ultimately work or there can be ways to destruct the pain pathways. So, that is the intervention.

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So, what are the pain pathway destruction? This is reserved for the advanced cancer patients where the life expectancy is low. We the aim is just to enhance the quality of life to decrease the doses of drugs and their side effects and patient is having severe localized pain.

So, there are multiple targets in the human body given by the god which we pain physician target in the percutaneous minimally invasive manner to destruct that thing like start from the thalamus to cervical cordotomy different places dorsal rhizotomy and all that.

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So, what are the common targets which we pain patient target that is one is the most common is trigeminal neuralgia especially useful for the oral cancer patients. Even after the surgery or radiation or chemotherapy if the patient is having severe pain we go into the Meckel's cave under a CM fluoroscope guidance in a dedicated pain medicine OPD OT and we target the gastrin ganglion and we do the radio frequency treatment of that. The result is that patients requirement of analgesic drugs usually comes down drastically patient gets immediate and long term pain relief. Then come the celiac plexus, a wonderful intervention for the upper abdominal malignancy patient like the cancer of gall bladder, cancer of lower part of the stomach, cancer of pancreas and they can be targeted.

Then in the lower part of abdomen cancer of uterus, cancer of cervical cervix, cancer of anal canal they causes severe lower abdominal pain and that can be relieved with the help of superior hypogastric plexus rhizolysis. And then cancer of anal canal, cancer of rectum they also respond to the ganglion impar.

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Celiac plexus destruction

- Upper abdominal visceral pain
- Pancreas, hepatobiliary, stomach, intestine
- 85% success

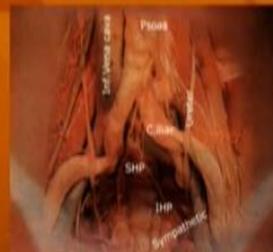


The Celiac plexus destruction is situated in front of aorta at the level of L1 and it is very useful intervention for the upper abdominal visceral pain due to gallbladder cancer, pancreas cancer, stomach and lower part of esophagus cancer. And up to 85 percent patient they report of wonderful pain relief after that.

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Superior hypogastric plexus destruction

- Pelvic visceral pain
- Bladder, prostate, cervix, uterus, ovary, colon & rectum
- 75% success



Then superior hypogastric plexus as I told it is in the lower part of abdomen in front of the spine. We pain physicians use a CRM fluoroscope and x-ray machine in a pain medicine OT and we target this plexus.

And this results in a wonderful pain relief in the patients of carcinoma of bladder urinary bladder, prostate, cervix, uterus, ovary and colon.

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Then comes the ganglion impar, again as minimally invasive intervention no big incision, no big admission, no long term in admission in the hospital and patient gets better with the CA rectum, anal canal, and vagina vulva cancer patients.

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Cementoplasty for Bone Metastasis..

- For patients with Bone metastasis
- Unresponsive to conventional Pharmacology & Radiotherapy
- All bones can be stabilized and treated
- Most common- Vertebral mets & Kyphoplasty & Vertebroplasty

Then come the most advanced treatment for the bone metastatic pain when there is a metastasis that means, the spread of cancer to the bone. We pain physicians are able to do upper coat area cementoplasty in these patients and these patients are usually unresponsive to conventional pharmacos and radiation therapy. Please remember radiation is considered to be the most first line treatment for the bone metastatic patient, but unfortunately it does not work for all.

It does work it takes up to 6 weeks to work and if after 6 weeks there is no relief it is not going to be relieved. So, what we do that we stabilize the bone with the metastasis with the percutaneous delivery of bone specialized bone cement that is PMMA cement and most commonly we treat the vertebral metastasis with kyphoplasty and vertebroplasty.

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Kyphoplasty in a case of Vertebral mets with immediate relief



So, here you can see that there is a patient who had collapse of vertebra and we have gone inside with our fine equipment under the CM fluoroscope picture and we have finally, achieved the filling of vertebra stabilization of vertebra with the cement and with the immediate relief.

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Intrathecal Morphine Pump for cancer pain



Then comes the Intrathecal morphine pump for cancer pain amazing treatment, amazing treatment and here you can see this is one of our patient. We put use a very fine catheter

to deliver the medicine directly to the spinal cord and we fill this pump with the morphine drug in morphine injection, place it under the skin in the lower part of abdomen.

Here you can see that patient this catheter is going into the spine and this is the catheter this is a pump which is filled with the morphine. The most amazing part is that this particular patient was on 150 milligram of oral morphine per day 150 and currently through this pump this patient is only on 0.6 milligram morphine in 24 hours. So, you can see the drastic reduction of morphine doses to the patient with immediate and wonderful relief and with almost non-existent side effects. While when patient was on the oral morphine patient was having severe nausea vomiting, severe constipation for that we were giving a lot of medicine different medicine, but now he is free of all medicines.

This pump is continuously working by itself every 4 month patient comes to us, we refill it without any incision in a percutaneous manner through an injection and patient goes back.

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Pain Services At Our Institute
What we are providing--

- Acute Pain Service (In patient)
- Pain Clinic (Outpatients)
- Chronic Non-Cancer pain- Chronic Low back Pain, Trigeminal Neuralgia, Post Herpetic Neuralgia, Migraine & Cluster haedache, Spheno-palatine Neuralgia

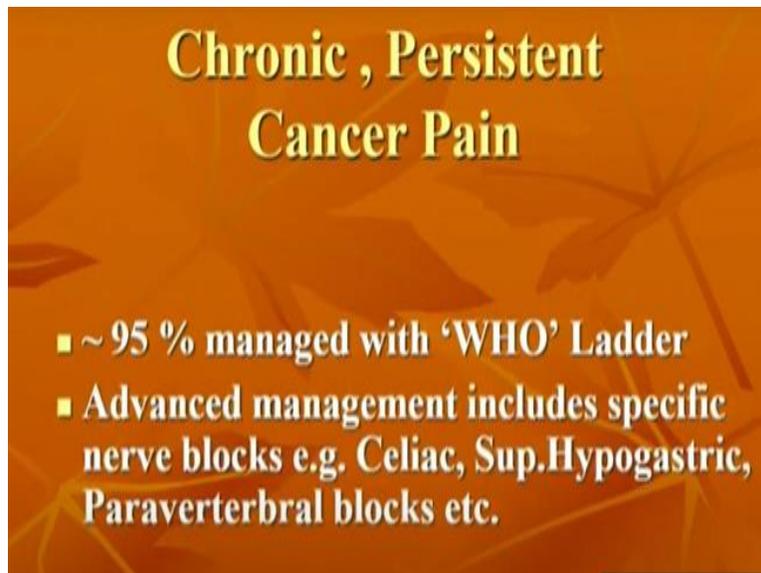
So, at our institute of Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow at pain medicine OPD what we are providing? We are providing acute pain services for our inpatients. We are providing pain medicine OPD where we are treating all kind of

chronic pain patients including the low back pain, spine pain, vertebral fractures, neuralgic pain, trigeminal neuralgia, postherpetic neuralgia, joint pain, arthralgias, arthritis, rheumatological diseases and all kind of different and difficult pain syndromes. Even after the pain after the spine surgery and after the total knee replacement. With the most advanced MIPSIs like the radio frequency ablation, cooled radio frequency ablation, pulse radio frequency ablation, intrathecal pumps, spinal cord stimulator, vertebral stent like this is something new for you guys I believe like we put the strand in the heart for the heart condition.

Now, we are able to put the stent in the vertebral body to stabilize it that is the most advanced treatment of the India of the world and which we are able to provide to our patients and you will be happy on this here note to notice that in pain medicine we are no less than anyone across the globe. So, you should be proud of it.

Cancer pain we are also treating.

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So, most of the cancer pain patients are managed with the WHO ladder, but multiple MIPSIs are available which can be helpful and then pumps.

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Interventional Therapies

Chronic non-cancer Neck/ Back Pain

- Epidurals: cervical, thoracic, lumbar, caudal
- Transforaminal or Nerve root sleeve injections for Sciatica/ Radiculopathy
- Facet Denervation & Medial Branch Blocks
- Sacro-iliac joints

L.A. & Steroids

Interventional Therapies

Facial Neuralgias, Cluster Headache

- Trigeminal Neuralgia- Gasserian ganglion & Tributaries block
- Glossopharyngeal neuralgia- IX Nerve Block
- Sphenopalatine Ganlion block- atypical facial pain, Cluster headache
- Lumber Symapathectomy- Buerger's Ds., Phantom Limb Pain

And for interventional therapies we are doing neck pain, back pain, spine pain with the epidurals, transforaminal, facet denervation with radio frequency and other things sacro-iliac joint, rhizolysis, MIPSIs.

For trigeminal neuralgia, gasserian ganglion, glossopharyngeal neuralgia, sphenopalatine, lumber sympathectomy is for the Buerger's disease and all that.

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Interventional Therapies Sympathetic Nerve MIPSIs for Cancer/ Non Cancer Pain

- Stellate
- Lumbar L.A
- Coeliac Neurolytic
- Splanchnic
- Hypogastric
- Ganglion impar

And for sympathetic MIPSIs cancer and non cancer patients start from the stellate ganglion rhizolysis to lumbar sympathetic to me is for the celiac Rhizolysis, Splanchnic rhizolysis, hypogastric ganglion impact all these.

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Case study-1

- 55 y/o female, post Sx, CT & RT case of Ca-Cervix/ locally invasive tumor/ mets
- C/o severe pelvic visceral pain/ not relieved with IV Tramadol(mild relief for 2 hrs. only)/ VAS- 9/10/ distressed/ lack of sleep
- Pain Intervention- Sup. Hypogastric plexus Rhizolysis with phenol 10%
- Now comfortable on Aceclofenac 100 mg BD and Tryptomer 10 mg HS

So, now few case reports this was a female she was post surgery, post CT scan, post radiotherapy of carcinoma cervix with locally invasive tumor and metastasis. She complained of severe pelvic visceral pain not relieved with multiple analgesic like

tramadol and morphine. And we did superior hypogastric plexus rhizolysis with phenol and now patient has come down to the step 1 of WHO ladder from she was not relieved with step 3 after the intervention she is stable at step 1 with accelofenac only.

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So, this is the picture of real patient where you can see that our fine cannulas has gone inside the patient ahead of the spine and we have put some dye to localize the area and then we did the rhizolysis.

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Case- 2

- Complete oncologic work-up was done to find the Primary, but negative
- Pain was unresponsive to WHO ladder
- So IPM came in picture and Percutaneous Vertebroplasty and Sacroplasty was done with Biopsy was also taken
- Finally a diagnosis of 'Plasmacytoma/ Multiple Myeloma' was made & patient was treated accordingly

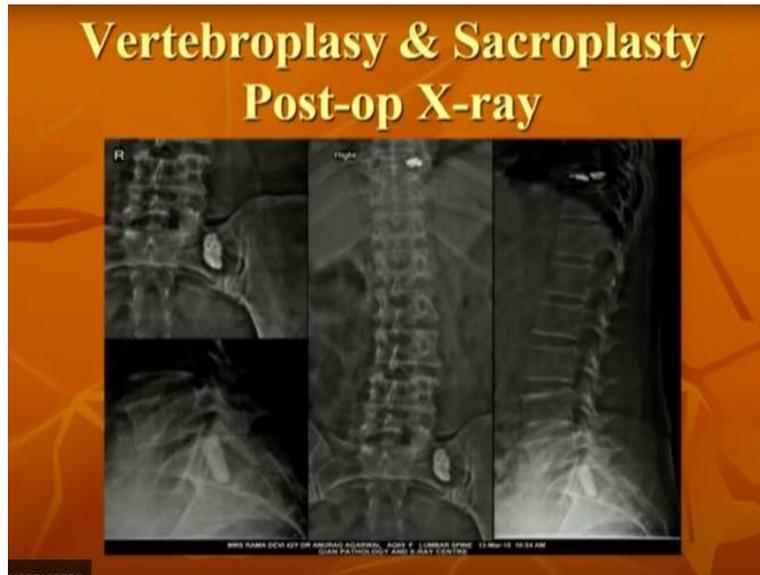
Another patient she was 55 year female back pain with no radiation sitting intolerance and on x-ray we found that she had a fracture of D12 vertebra and abnormal shadow that was metastasis at her hip bone that is sacrum.

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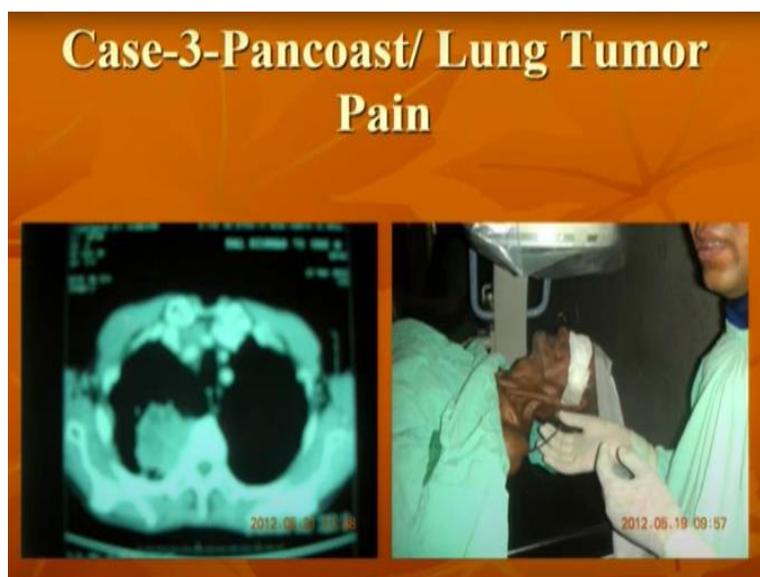
And on MRI the diagnosis was confirmed and here you can see that in the MRI of picture you can see that this is collapse D12 vertebra and also at the sacrum you can see that is a fill up of metastatic lesion.

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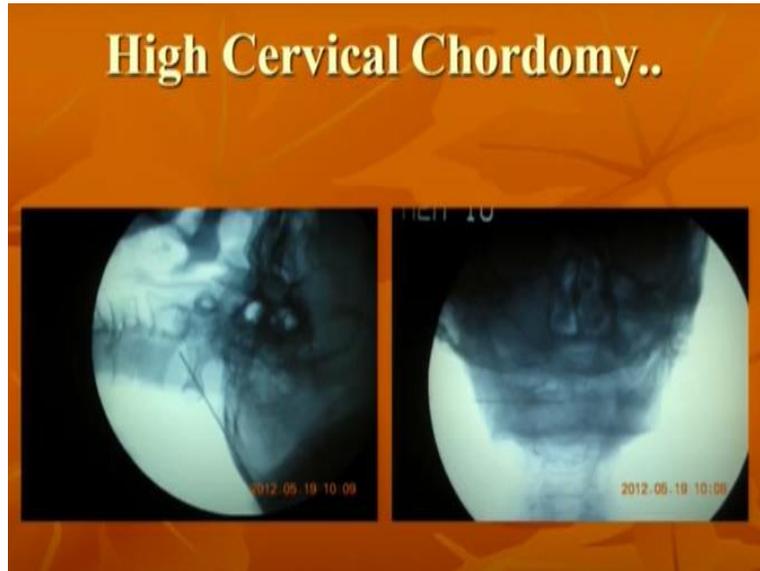
So, we did a complete workup she was unresponsive to the WHO ladder we did a percutaneous vertebroplasty as well as a percutaneous sacroplasty and her pain was completely relieved. So, you can see that there is a bone cement in the sacrum left side of sacrum as well as bone cement in the D12 vertebra and she was completely relieved without any big incision, without any multi hospital stay.

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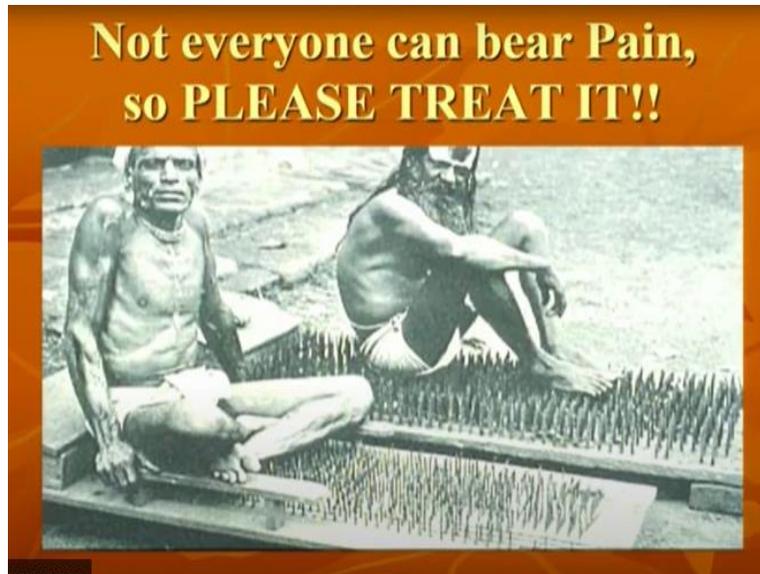
Now, another patient she was a he was a patient of carcinoma lung and which was involving the brachial plexus which is the group of nerves which supplies the upper arm upper limb.

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Here you can see on the CT scan the used tumor on the left side of lung with the severe pain most severe pain and we what we did we did a high cervical cordotomy of this patient at C0 C1 level that is the most advanced intervention to the date and very few people in India and globe practice it. We fortunately do thanks to our teachers and Bhagwan (Hindi word meaning God) almighty we are able to help our patients. Here you can see our fine cannula is going into the spine, spinal cord actually and we target the lateral spinothalamic tract with the radio frequency of this thing.

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So, the end point is that not everyone can bear pain. So, please treat it. Ours Bharat India is a land of sages big big sages who can bear pain we have a story of Bhishma Pitamaha who laid on the multiple spikes, but not everybody can treat it. So, please treat it as a doctor.

So, and freedom from pain is a basic human right and this is my institute Dr. Ram Manohar Lohia Institute of Medical Sciences. As I told you earlier I am a pain physician and a professor of anesthesiology we run a pain medicine OPD and a pain medicine ward and pain medicine OT. We do all kind of advanced MIPSIs and comprehensive care for all type of chronic pain patients.

We urge all the people listening to it who are from the anesthesiology background if you are interested in the field of pain medicine we are having PDCC one year course at our institute you can visit the website of institute drmlims.ac.in to find out about it. You can also join us for the observership of 1 to 3 months at our institute if you are interested in the pain medicine.

So, with these words good luck and good wishes from my institute that is Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow. I am having my Facebook page with the name of pain free India slash Dr. Anurag Agrawal as well as YouTube channel with the name of pain free India and where I put lot of videos of the procedures MIPSIs

as well as of the different testimonials of the patient for the awareness purposes all only, about the availability of most advanced treatment for the chronic pain syndrome. So, please use it, please visit and thank you and good luck for your bright future. Thank you.