

1 Peri-Operative Pain control.

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Pain is an un-avoidable bi-product of any surgical procedure, whether it is a simple Partial Nail Avulsion or complicated Medial Column Fusion. Whatever Podiatric Surgeons do in order to help their patient, at sometime, pain will be experienced by our patient. We can't simply 'slap them on the face and tell them it's all over'(1), as far as Podiatric patients are concerned, the surgery is just the beginning. There will be post-operative pain.

For the Podiatrist the majority of the work comes prior to the surgery. The patient history is taken, radiology is undertaken and evaluated, the patient is counselled into what to expect, and their expectations following the surgery taken into account, the pre-op screening is done and finally the surgery is performed.

One of the issues arising out of Podiatric Surgery is the question of effective pain control post operatively, this being highlighted by Bewick (2). J.E.Utting states 'that it is usually easier to stop severe pain from occurring that it is to get rid of it once it has appeared (3). Depending on the training, qualification and local policies Podiatrists can have limited access to Analgesics. This may limit the use of potent analgesics. However some family doctors are willing to help with Analgesia.

Pain can be reduced in the post-operative patient by following a few simple post surgical rules. These include; reducing movement, this will prevent the operative sites moving, reducing swelling. This can be achieved by resting. Resting achieves two goals the reduction of movement and reducing the risk of bleeding and as a result reducing the risk of infection. An adjunct to resting can be splinting or casting. There may be times when a patient who is perceived as unlikely to follow advice, a splint or cast may be in the best interests of the patient, forcing them to rest the operative site. However, attention should be paid the risk of Deep Vein Thrombosis to the stasis of the blood flow, as described by Vichrow (4).

In the majority of cases pain can be described as anything from slight to severe or intractable. One of our jobs is to reduce our patients predicted pain, however we must remain within the Law and Group Patient Protocols.

POST-OPERATIVE PAIN CAN BE INCREASED DUE TO:

Infection- Infection causes tissue swelling, the bodies natural response to infection is to allow the area to become inflamed due to increased vascular flow bringing white blood cells to the area to cope with the infection. As the tissues become inflamed pressure is placed on the nerve receptors.

Gangrene- This is possible the worst type of complication which haunts the Podiatric Surgeon. There is no reprieve. The patient who has gangrene due to compromised circulation, e.g. too long tourniquet time, arterial blockage will have severe pain due to oxygen starvation. This pain is immediate and unremitting.

Trauma- even the most compliant of patients, with regard to post-operative care, can trip over the cat, or knock the door post. This can cause tissue swelling, burst sutures, move the osteotomy or even cause a fracture. One trauma not to be ignored is the trauma of the surgery carried out. The patient should also refrain from excessive activity. The patient should have the limb elevated and not be moving around unnecessarily.

Complex Regional Pain Syndrome- a rare complication where the patient experiences a burning pain over or near the site of the surgery, the effected area becomes painful and or swollen, and the skin becomes very sensitive to the touch.

Current Legislation permits Podiatric Surgeons in the UK, who are Fellows College of Podiatry (Surgery) and Podiatrists who hold the Certificate of Competence in the use of Prescription Medicines may supply Co-dydramol, maximum three days supply and Ibuprofen 200mg where the maximum dose is 400mg, maximum three days supply. It is noted that in many parts of the world Ibuprofen and Naproxen are available as over-the-counter medications. Bewick 2000 (2), stated, that in his experience this level of analgesia is not sufficient, for the pain experienced by Podiatric patients. The practitioner can look to the Analgesic Ladder (5) for pain control as Podiatrists we are at the second ‘rung of the ladder’

The Local anaesthetics commonly used in Podiatric Surgery are Citanest (Prilocaine 3%) & Scandonest (Mepivacaine 3%). However, they only have a relatively short Anaesthetic life compared to the amount of time that the patient will have to endure pain, these being 116 minutes for Prilocaine and 148 minutes for Mepivacaine.™

It has been established that giving Marcaine (Bupivacaine 0.25 - .05%) with Adrenaline does reduce the Day 1 Post-Operative pain, Kilmartin (6), however, if the total dose of the primary Anaesthetic has been used, there will be no margin for giving Bupivacaine, which is a longer acting anaesthetic effect 8-16 hours without exceeding a cumulative maximum daily dose. (MDD). Other concerns include damage to the nerve involved for example Neuropraxis. Another field block which could be utilized would be the Popliteal Block, whilst this can be very effective it can be unpredictable, additionally it is not always suitable for all cases, particularly those with a lower level of pathology. Francis (11)

The usual practice is to Anaesthetise, operate, then prior to discharge give Analgesic and anti-inflammatory drugs. Due to the process of Anaesthetising and the following procedure, it is perfectly possible that the anaesthetic effect will be wearing off, especially if there has been profuse bleeding intra-operatively.

Analgesics and anti-inflammatory drugs take time to be absorbed into the blood stream to achieve a therapeutic effect. *See Table 1*

Table 1 Time in minutes for active drug to reach Therapeutic plasma concentrations (7).

Drug	Time to reach Therapeutic Concentration
Co-Codamol	
Coedine Phosphate 8mg	60 minutes
Acetaminophen 500mg	30 - 120 minutes
Co-Dydramol	
Di-hydrocoedine Tartrate 10mg	60 minutes
Acetaminophen 500mg	30 - 120 minutes
Ibuprofen	120 minutes

Other factors which effect the absorption into the blood is whether the patient has taken the drugs on a full stomach. Research has shown that Ibuprofen is absorbed more rapidly on an empty stomach (7), although the patient should be advised to take the medication with or after food. Some centres (8) routinely starve the patient prior to surgery so should the Local Anaesthetic fail the patient can be given a General Anaesthetic.

If a standard procedure is taken for example, a Scarf & Akin Osteotomy. The time scale realistically, is as follows, can be 110 minutes. *See Table 2*

Table 2 Time scale for Surgery

Action	Time (minutes)
Anaesthetise	0
Wait for Anaesthetic to take effect & Skin Prep	30
Operation	60
Recover, check for bleeding & analgesic given	20
Total Episode Time	110

Total time 110 minutes, assuming no complications or delays. Considering the length of the anaesthetics with Prilocaine you would have a safety window 6 minutes and with Mepivacaine 38 minutes. Referring to table 1, Ibuprofen takes 120 minutes & Co-Dydramol up to 120 minutes to reach therapeutic levels.

Theoretically, if the post operative analgesia is given prior to the Anaesthetic, the analgesic/anti-inflammatory effect would reach therapeutic plasma levels at the end of surgery, just prior to the Anaesthetic effect wearing off.

STUDY.

To evaluate the effect of giving Analgesic/Anti-inflammatory medication prior to Anaesthetic as opposed to postoperatively.

METHOD.

Identify two groups of twenty patients, scheduled for osteotomies.

One group to have post operative medication, the other group to receive Analgesic & Anti-inflammatory medication prior to anaesthetic administration.

Both groups of patients are to be given scoring sheets to score the pain levels at the following times:

1. Prior to discharge, immediately post-operatively
2. On retiring for the night.
3. On waking the next morning.
4. Going to bed day 1 post-op
5. Going to bed day 2 post-op
6. Going to bed day 3 post-op

The pain scoring will use a Categorical Verbal Rating Scale (9). A Categorical Verbal Rating Scale was chosen as opposed to a Visual Pain Analogue Scale due to problems experienced with patient compliance in completing this type of pain description. (9)

Patients to be excluded from the trial:

Patients who: have an intolerance to: Ibuprofen
Diclofenac
Coedine
Acetaminophen
History of gastric bleeding.
Continuous & persistent indigestion.
Hepatic insufficiency.

These excluding factors would have been identified at the pre-operative assessment stage.

Patients to be included in trial are currently taking NSAID's, Acetaminophen based products providing they are taking a the medication on a similar regime to the prescribed post operative programme as the other patients. See Table 3

Table 3 Post Operative Medication

Drug	Dose
Diclofenac	1 tid
Co-dydramol 30/500	1-2 qds
Acetaminophen 500mg	1-2 qds

If patients are taking a different NSAID these patients can be included due to one NSAID effect being similar to all NSAID's. Gotzsche maintains that 'no single-dose trial has shown any efficacy advantage over one NSAID over another'(10)

TRIAL

Patients who were having Scarf & Akin procedures were chosen, this was a common procedure, It was decided that all patients on the chosen day would receive the Analgesics & NSAIDS either before or after the procedure. We randomised that day rather than the patients to prevent patients questioning why some had been given the drugs pre or post-op.

Patients who received the Analgesics & NSAIDS pre-op were told that we were trying to see if taking the medication before the surgery made any difference to the pain they could experience. Those given the drugs post-op were told nothing, as this was normal procedure. Operate then give drugs. All Patients were given the Analgesics & NSAIDS with a biscuit to reduce any possible gastric irritation.

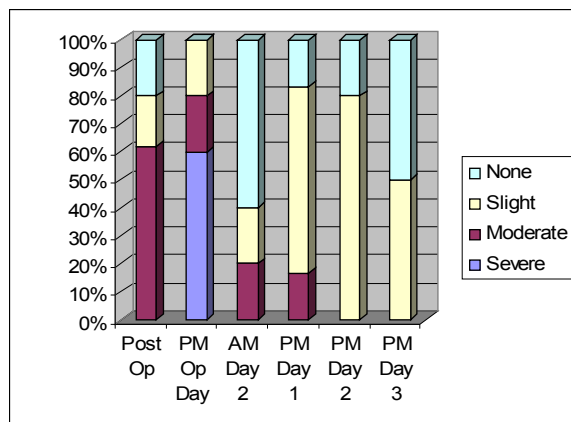
As patients left the day surgery suite, they were given a questionnaire as outlined above.

RESULTS.

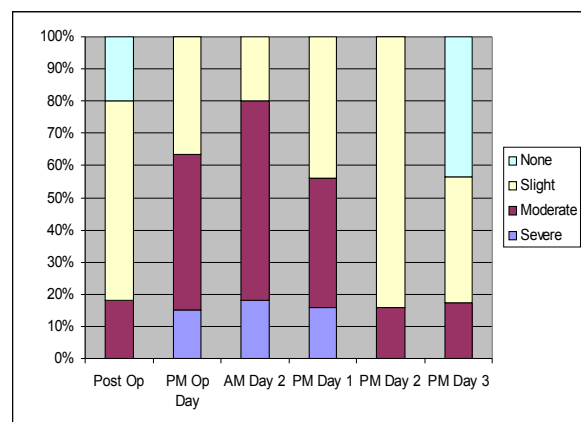
Early results showed that there was severe pain on days one and two in the group of patients taking the drugs post-operatively, with moderate pain lasting into day three. In the group of patients taking the drugs pre-operatively there was severe pain at the end of the day of surgery. Mr Francis (11), questioned these patients extensively, and came to the conclusion that as they had no pain following the surgery they carried on with normal activities, one even cooking dinner for a dinner part of ten that night! Future patients were counselled against this activity.

The results shown in the table below, show that patients taking the drugs pre-operatively had only slight or no pain by day two, post-operatively. Patients taking the drugs post-operatively still had moderate pain on day three.

RESULTS CHART



Patients receiving drugs Pre-op



Patients receiving drugs Post-op

One patient became so engrossed in the study that she went to the extent of documenting when she took her drugs. The table is shown below.

		Diclofenac	Co-dydramol			Diclofenac	Co-dydramol
Friday	Op	1	2		Sunday	9.00am	1
	7.00pm	2				5.00pm	1
	11.00pm	1	2			11.30pm	1
Saturday	8.00am	1	1		Monday	7.30am	1
	3.00pm		1			3.20pm	1
	4.00pm	1				11.30pm	1
	11.45pm	1	1				

CONCLUSION

I feel that there is validity in taking into consideration the timing as to when Analgesics and NSAID's should be given. This small trial shows that there is a real decrease in the pain that patients experience when the drugs are given pre-operatively as opposed to when these same drugs are given post-operatively. There may well be scope to actually reduce the amounts of Analgesic's and NSAID's given to our patients. This would be especially important when the side effects are taken into consideration. These include gastric irritation and bleeding in the case of prolonged use of NSAID's, and constipation especially with the drugs containing Coedine. It may well be the case that the level of Analgesic can be reduced to the Acetaminophen only drugs without the need for Codeine at all.

The basic philosophy of Pharmacology should be remembered. The minimum amount of drug should be used to achieve the maximum effect.

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* Rudolf Vichrow, German doctor often referred to as the 'father of modern pathology'. Born 13 October 1821, Schivebein, Pomerania, Prussia. Died 5 September 1902 Berlin.