A 33 year old lady, in her second pregnancy (Para 1 Gravida 2), had severe low back pain and sciatica in her left leg secondary to a prolapsed disc since the vaginal delivery of her twin boys five years previously. These symptoms were managed on paracetamol, diclofenac, codeine and amitriptyline. Diclofenac was stopped on the diagnosis of her current pregnancy. She booked at 10/40, when she was already under the care of a physiotherapist and chiropractor and required crutches to mobilise. Her symptoms progressed so much so that at 16/40 she required diazepam and a wheelchair to mobilise. Her regular follow up with spinal surgeons did not reveal any sensory deficit but there was limited mobility of both legs. A magnetic resonance imaging (MRI) showed loss of the lumbar lordosis with dehydrated discs in lumbar are at the level of Lumbar 4/Lumbar 5 and Lumbar 5/Sacral 1; narrowing of the L5/S1 disc space and a large left para-central disc protrusion that was occupying the lateral recess and compromising the left nerve root exiting at this level. Her symptoms progressively got worse and at 23/4023 weeks of gestation she attended antenatal clinic on the stretcher, unable to mobilise from a supine position secondary to exacerbation of her pain symptoms. She was extremely emotional as the analgesics were not effective and she was almost bed bound at home; her husband was her full time carer. In view of the severity of her symptoms, she was admitted to the antenatal ward for full assessment to rule out cauda equina and to optimise her analgesia. An urgent Multi disciplinary team meeting was arranged with senior midwife, Obstetrics, anaesthetist consultants and antenatal ward manager to discuss the further immediate plans as well as long term plans for the management in this pregnancy. Spinal team was consulted and they organised an appropriate bed to the antenatal ward and following anaesthetic review she was started on regular oromorph to assess her opiate requirements. In consultation with the spinal team an appropriate bed was arranged in the antenatal ward. She was started on regular oromorph after full assessment by the anaesthetist team. Spinal team suggested for epidural as analgesia if she did not respond to regular oromorph. Given her immobility she was started on prophylactic low molecular weight heparin as venous thrombophilia. After twenty-four hours her pain was managed with higher dose of oromorph (40 mg daily). She responded to the new analgesic plan in next 24 hours and was discharged home, aware that she could attend the antenatal ward for readmission if any further exacerbations occurred. Her GP and community midwife were kept informed and planned to increase the oromorph if needed. At 25/40, she was started on morphine sulphate (MST) 50mg BD. Through the combined efforts of her Obstetrician, GP and the Orthopaedic nursing team, an orthopaedic bed was provided to support her at home. Given the severity of her symptoms a provisional plan for delivery by her Obstetrician and spinal team at 34 weeks was made, so that a microdiscectomy could be performed two weeks post-partum. However her symptoms improved, such that she reduced her MST to 30mg bd twice daily and a repeat MRI scan showed no worsening of MRI features compared to the previous report. Her mobility was slightly improved. Therefore, delivery was re-scheduled for 37/40 (term), with a planned micro-discectomy two weeks after delivery. There was lengthy discussion regarding the mode of delivery with patient in close liaison with spinal surgeon. In view of previous uncomplicated delivery of twins patient was extremely keen to avoid caesarean section and try for a normal delivery. An Obstetric MDT in collaboration with the Consultant spinal surgeon agreed that patient was suitable for a vaginal delivery while the spinal team will be fully informed of the progress of her labour. Awareness of the symptoms of cauda equina and the need for urgent surgical intervention in their presence was highlighted to the Obstetric multi-disciplinary team and the induction was planned when the spinal Surgeon would be available, if required in an emergency. Patient had a successful and uncomplicated normal vaginal delivery following cervical priming with prostaglandin and an artificial rupture of membranes under epidural analgesia. Her baby was delivered with good appgar score and normal blood gases. There was no evidence of neonatal abstinence syndrome with monitoring.

An uncomplicated elective microdiscectomy of lumbar intervertebral disc was performed by spinal team 2 weeks following delivery. Follow up review by spinal team at 6 weeks showed good progress with marked improvement in her back and leg pain with
steroid injection in the epidural space has also been used to manage
neonatal team, informing them of the planned timing of delivery will
and the potential to avoid surgical intervention. Close liaison with the
be considered in the context of fetal maturity gained by progressing
a reduced incidence of NAS [4]. The risks of developing NAS need to
whilst stopping opiates one week prior to delivery are associated with
5-20% of those taking tricyclic anti-depressants [3]. Polypharmacy
5-20% of babies to women on prescription opioid medication3 and
analgesia fails to manage symptoms, then the use of muscle relaxants,
ductus arteriosus, fetal renal failure and oligohydramnios. If simple
This joint laxity accompanied by the musculoskeletal adaptations and
protrusion can be confirmed and monitored using MRI of the spine, which
is considered to be safe in pregnancy [1,2].
During pregnancy the release of hormones including relaxin are
to be due to the degenerative changes as well possibly
some fibrosis around the operator nerve root and she was discharged
from the clinic with advice of regular regime of exercises to improve
control of her postural muscles and to improve general function.

Discussion
Symptomatic lumbar disc protrusion in pregnancy is rarely
encountered with an incidence of approximately 1 in 10,000
pregnancies1. Pressure on the lumbar intervertebral discs in the lumbar
spinal cord can lead to protrusion of the outer fibrous portion (annulus
fibrosis) of the disc and tearing of this tissue can lead to the softer inner
tissue (nucleus pulposus) herniating into the spinal canal. A combination of
an inflammatory reaction and direct compression of nerve routes leads
to pain in the areas supplied to them. With lumbar disc protrusion this
may cause severe lower back, buttock and leg pain that limits straight leg
raising, movement and certain positioning. The level and extent of disc
protrusion can be confirmed and monitored using MRI of the spine, which
is considered to be safe in pregnancy [1,2].

The presence of a lumbar disc protrusion doesn’t have a direct
effect on the pregnancy however the indirect effects include the
increased risk of venous thrombosis in the presence of immobility,
the risk of neonatal abstinence syndrome with the use of strong opioid
analgesia, muscle relaxants and antidepressants and the potential risk
of iatrogenic, pre-term operative delivery.

Most pregnant woman presenting with back pain will respond to
simple analgesia and physiotherapy avoiding Non-Steroidal Anti-
Inflammatory Drugs (NSAID) due to the risk of premature closure of
ductus arteriosus, fetal renal failure and oligohydramnios. If simple
analgesia fails to manage symptoms, then the use of muscle relaxants,
amitriptyline and stronger opioid analgesia would be considered.
Each of these carry a risk of neonatal abstinence syndrome (NAS) in
which babies experience varied symptoms of withdrawal including
jitteriness, irritability and a high pitched cry. NAS is reported in
5-20% of babies to women on prescription opioid medication3 and
20-50% of those taking tricyclic anti-depressants [3]. Polypharmacy
increases the risk of NAS in the neonate and maternal dosage seems
to correlate with the duration of treatment required in the neonate,
whilst stopping opiates one week prior to delivery are associated with
a reduced incidence of NAS [4]. The risks of developing NAS need to
be considered in the context of fetal maturity gained by progressing
with the pregnancy, maternal physical and psychological well-being
and the potential to avoid surgical intervention. Close liaison with the
neonatal team, informing them of the planned timing of delivery will
allow the team to plan to observe the baby and treat NAS if it occurs.
Steroid injection in the epidural space has also been used to manage
pain symptoms [5]. Reduced immobility secondary to pain symptoms
is a moderate risk factor of venous thromboembolism and in the
presence of two other intermediate risk factors, thrombo-prophylaxis
would be recommended from 28 weeks gestation [6]. Consideration of
the psychological impact of pain and limited mobility should be made,
particularly in the context of any previous history of depression. In the
event of conservative measures failing, corrective surgery including
microdiscectomy, laminectomy and discectomy may be considered if
there is intractable pain or progressive neurological deficit during
pregnancy. Cauda Equina occurs when spinal cord compression
gives rise to symptoms of loss of sensation in the saddle area, loss of
bladder sensation, with possible urinary and faecal incontinence. It is
an absolute indication for urgent surgery to prevent long term sequelae
irrespective of the gestation.

Ideally these procedures are usually performed in a prone position
to minimise blood loss and allow access to the surgical field [7], however
surgery in the left lateral position are reported [8] although there are
concerns about the possibility of a longer procedure with an increase in
blood loss [9]. In severe cases where conservative measures have failed
to control the symptoms, women can be operated safely in the first
and second trimester and then continuing with the pregnancy until
term [5]. However in the third trimester, the gravid uterus may mean
that the desired positioning cannot be achieved [7]. After 34 weeks,
derivery prior to corrective surgery may be considered weighing up the
relatively lower risk of complications of prematurity at this gestation
against the technical challenges of operating including the difficulty
in monitoring fetal well-being. The decision of whether to interrupt
the pregnancy would be a multi-professional involving the patient,
spinal surgeon, neonatologist, midwife and Obstetrician. Ochi et al
suggest a protocol to aid the decision making process of continuing or
interrupting the pregnancy and in cases where the prone position
cannot be safely achieved but delivery is considered too risky for the
fetus then surgery in the lateral position is suggested [7].

There is no clear cut guidance on mode of delivery in such cases.
Historically caesarean section has been chosen as preferred mode of
delivery due to the theoretical risk of a raised intra-thecal pressure
with the second stage as well as convenience of combining caesarean
delivery with the spinal surgery. However there is no evidence that
vaginal delivery is contraindicated in such cases and also performing
two surgeries at a time exposes the patient to the risks of a prolonged
operating time and its consequences. As we grow more knowledgeable
about the risks of caesarean section not only at the time of surgery
but also in future pregnancies, careful consideration is required as
to the appropriateness of this. In our case, this lady had a previous
uncomplicated twin vaginal delivery and so the chances of a successful
vaginal delivery when established were high. Irrespective of mode of
delivery epidural anaesthesia can be administered in the presence of a
lumbar prolapse [7].

In women who had corrective surgery prior to pregnancy, an
observational study of 41 women comparing the effectiveness of regional
anaesthesia found no difference however reported a higher
rate of requiring multiple insertions [10]. Whereas in 21 women who
had regional anaesthesia in labour within the study by Sven et al found
that 52% were not satisfactory [11]. This study also showed that vaginal
delivery is not associated with a persistence of lumbar symptoms11 and
that there seemed to be a (non-statistically significant) trend towards
an increase in pain in those delivered by caesarean.

Summary
Given the uncommon occurrence of significant disc protrusion
in pregnancy, each case should be individually assessed and managed with integration of the multi-disciplinary, multi-professional team, ideally centrally co-ordinated by the Obstetric Specialist. The prompt adaptation of the delivery of care services in this case ensured that her pain symptoms were managed and the subsequent support within the community prevented further deterioration resulting in a term vaginal delivery and elective corrective surgery, minimising potential risk to both the mother and her baby.

References

1. LaBan MM, Rapp NS, von Oeyen P, Meerschaert JR (1995) The lumbar herniated disk of pregnancy: a report of six cases identified by magnetic resonance imaging. Arch Phys Med Rehabil 76: 476-479.

2. Brown MD, Levi AD (2001) Surgery for lumbar disc herniation during pregnancy. Spine (Phila Pa 1976) 26: 440-443.

3. Kocherlakota P (2014) Neonatal abstinence syndrome. Pediatrics 134: e547-561.

4. Cramton RE, Gruchala NE (2013) Babies breaking bad: neonatal and iatrogenic withdrawal syndromes. Curr Opin Pediatr 25: 532-542.

5. Abou-Shameh MA, Dosani D, Gopal S, McLaren AG (2006) Lumbar discectomy in pregnancy. Int J Gynaecol Obstet 92: 167-169.

6. (2015) Thrombosis and Embolism during Pregnancy and the Puerperium. Reducing the Risk (Green-top Guideline No. 37a) RCOG.

7. Ochi H, Ohno R, Kubota M, Hanayu R, Sakai K, et al. (2014) Case report: The operation for the lumbar disk herniation just after cesarean delivery in the third trimester of pregnancy. Int J Surg Case Rep 5: 1178-1182.

8. Kathirgamanathan A, Jardine AD, Levy DM, Grevitt MP (2006) Lumbar disc surgery in the third trimester—with the fetus in utero. Int J Obstet Anesth 15: 181-182.

9. Al-areibi A, Coveney L, Singh S, Katsiris S (2007) Case report: anesthetic management for sequential Cesarean delivery and laminectomy. Can J Anaesth 54: 471-474.

10. Bauchat JR, McCarthy RJ, Koski TR, Cambic CR, Lee AI, et al. (2012) Prior lumbar discectomy surgery does not alter the efficacy of neuraxial labor analgesia. Anesth Analg 115: 349-353.

11. Berkmann S, Fandino J (2012) Pregnancy and childbirth after microsurgery for lumbar disc herniation. Acta Neurochir (Wien) 154: 329-334.