

margin of the umbilicus. The direction of skin splitting was vertical in all cases. Secondly, full thickness skin biopsy specimens were taken from beside the umbilical incisions of six patients (three horizontal and three vertical incisions). Routine histological sections showed that in all cases collagen was aligned vertically at the lower umbilical verge. Furthermore, when a vertical incision was made 68% fewer blood vessels were transected (means of 14.6 with vertical incisions and 46 with horizontal incisions per field at 25 objective magnification). Clinically this was shown by less bleeding after operation.

Comment

Long before Langer's experiments it was appreciated that the orientation of a wound had a bearing on its ability to heal. Langer's demonstration of the lines of congregated collagen bundles gave a reason for this: incisions that cut across these lines tend to gape as the wound edges are perpendicular to the lines of tension; these lines of tension pull the wound edges apart, encouraging the scar to widen and keloid to form.

Although all of the incisions in the first part of the study were sutured for the purposes of comparison, we noticed that the edges of vertical incisions naturally opposed themselves and did not require suturing. This was in stark contrast with the horizontal incisional wounds, which tended to gape. Avoiding sutures has advantages for wound healing and the incidence of wound infection.⁴

Cosmetic result is difficult to assess objectively. As the most important opinion is that of the woman who bears the scar we asked each woman to assess her own scar. The results clearly favoured a vertical incision.

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Departments of Obstetrics and Gynaecology and Pathology, Countess of Chester Hospital, Chester CH2 1BQ

MICHAEL C EAST, MB, MRCOG, registrar in obstetrics and gynaecology
PETER R M STEELE, MRCPATH, PHD, consultant in histopathology

Correspondence to: Dr M C East, The Stores, Church Lane, Guilden Sutton, near Chester.

Inhaling heroin during pregnancy: effects on the baby

In 1984 drug pushers moved into two areas of high unemployment and poor housing served by our neonatal unit. We were suddenly confronted with the problem of antenatal drug abuse and its effects on neonates. An estimated 95% of heroin abusers in Merseyside inhale heroin ("chasing the dragon") rather than inject it. The effect of this mode of abuse on the newborn infant has been less well documented than the effect of intravenous heroin abuse.

Patients, methods, and results

Between December 1984 and June 1986, 24 babies (one set of twins) born to women known to have abused heroin during their pregnancies were admitted to the special care baby unit for observation for signs of narcotic withdrawal. Forty eight controls were obtained retrospectively by selecting the baby born immediately before and the baby born immediately after each baby in the study group. Characteristics of the index babies and the control group were compared with the Mann-Whitney U and χ^2 tests.

The women who abused heroin were more likely to be younger, single, and smokers and to book later for antenatal care (table). All had taken heroin by inhalation. One had occasionally injected heroin and had abused amphetamines and diazepam in early pregnancy. All except one admitted abusing drugs when questioned in the antenatal clinic, but they were reluctant to give details of substances abused. Sixteen mothers took drugs throughout pregnancy. Thirteen had been prescribed methadone in a detoxification programme. Sixteen had partners who used heroin.

The babies of the heroin abusers were born earlier and were smaller than the controls. One third of the study group were below 37 weeks' gestation compared with 4% of the controls. The babies who had withdrawal signs had weights below the 50th centile, but this was not significant. Eight babies showed signs attributable to opiate withdrawal: irritability (eight), tremor (seven), vomiting (six), snuffles (six), hypertonicity (five), high pitched cry (five), fever (three), diarrhoea (three), sweating (three), and convulsions (two). Their mothers had taken heroin throughout pregnancy; five had also taken methadone. Seven babies

Details of mothers and babies

	Heroin users	Controls	p Value
<i>Mothers*</i>			
Age (years):			
Range	17-30	17-38	<0.001
Median	20	25	
No (%) of primigravidas	12 (52)	18 (37)	NS
No (%) unmarried	17 (74)	10 (20)	<0.001
Time of booking (weeks):			
Range	10-31	8-26	<0.001
Median	18	12	
No (%) who smoked	19 (83)	22 (46)	<0.01
No (%) who used alcohol	10 (43)	20 (42)	NS
<i>Babies†</i>			
M:F	0.85:1	1:1	NS
Gestational age (weeks):			
Range	31-41	33-41	<0.001
Median	38	40	
Head circumference (cm):			
Range	27.5-35.8	28.8-37.7	<0.001
Median	32.6	34.7	
Birth weight (g):			
Range	1320-3910	1280-4240	<0.001
Median	2550	3510	
Birth weight (g) of term babies‡:			
Range	2120-3480	2620-4420	<0.001
Median	2900	3540	

*Twenty three heroin users, 48 controls.

†Twenty four babies born to heroin users, 48 controls.

‡Sixteen babies born to heroin users, 46 controls.

were symptomatic by 18 hours of age, the eighth not until 96 hours. Three babies had prolonged symptoms. Two of these had convulsions, but only one was given chlorpromazine. Phenobarbitone 10 mg/kg/day by intramuscular injection is ineffective for moderate to severe symptoms,¹ so oral chlorpromazine 3 mg/kg/day in divided doses² was given with good effect.

Comment

In our study one third of the babies showed signs of withdrawal, in contrast with 70-85% of babies born to mothers who injected heroin.^{1,2} Symptoms were similar but less severe after inhalation, possibly a consequence of smaller amounts of heroin reaching the fetal circulation due to the unpredictable absorption from the nasal mucosa. Drug abuse is often irregular, but conversion to oral methadone (accepted as effective and safe for people who inject heroin³) exposes the fetus to a regular dose of an opiate that is protein bound and longer acting.⁴ Convulsions are a recognised feature of neonatal heroin withdrawal, particularly in neonates of mothers receiving methadone as substitution treatment,⁵ and occurred in two of our babies whose mothers had taken methadone. The practice of substituting methadone antenatally needs to be reconsidered for women who inhale.

In view of its epileptogenic properties⁴ we question the use of chlorpromazine as a sedative and currently recommend 0.125 mg doses of oral morphine sulphate for withdrawal symptoms.

No baby had withdrawal signs if the mother had stopped inhaling heroin before the third trimester of pregnancy.

We were surprised by the number of women who were ignorant of the possible harmful effects of their habit on the baby. The government's antidrug campaign should emphasise the dangers of inhaling as well as injecting drugs during pregnancy and the potential adverse effects on the neonate.

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Neonatal Unit, Fazakerley District General Hospital, Liverpool

J E M GREGG, MRCP, paediatric registrar
D C DAVIDSON, FRCP, consultant paediatrician
A M WEINDLING, MD, senior lecturer in child health (neonatology)

Correspondence to: Dr J E M Gregg, Community Health Service Headquarters, Sefton General Hospital, Liverpool L15 2NE.