

## *Kasuistik • Casuistry*

### Plastic Bag Suffocation\*

C. J. POLSON and D. J. GEE\*\*

Department of Forensic Medicine, University of Leeds (Great Britain)

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*Summary.* The circumstances of suffocation by plastic bags are reviewed and illustrated, in the main, by cases which were investigated by the Department of Forensic Medicine, University of Leeds. There is a continuing need to draw attention to the hazards created by the wide-spread use of plastic bags for packaging.

*Zusammenfassung.* Es wird über Fälle von Erstickungstod durch Plastikfolien und -tüten berichtet. Häufig lassen die Umstände erkennen, daß es sich um Unfälle handelt: so bei Kindern, die im Spiel Plastiktüten über den Kopf zogen und erstickten, oder bei Erwachsenen, die Plastikfolien bei autoerotischer Betätigung zur Erzielung einer teilweisen Anoxie oder zur Inhalation von Narkotica (Äther, Chloroform) benutzten. In einigen Fällen, in denen sich auch häufig alkoholisierte Täter eine Plastiktüte über den Kopf gezogen hatten, handelte es sich um Suicide. Ein Fall der versuchten Tötung eines Kleinkindes mittels einer Plastiktüte wird beschrieben.

Die Todesursache ist fast immer Asphyxie, doch ließ sich in einigen Fällen, in denen typische Anzeichen des Erstickens fehlten, plötzlicher Herzstillstand nicht ausschließen.

*Key words:* Auto-erotic — Plastic Bag Suffocation.

The synthesis of polythene and its manufacture in sheets and bags created a revolution in the packaging industry but it brought with it new hazards. Bags made of this tough, transparent, waterproof material are excellent containers but if placed over the head they are lethal. Children are at special risk, since in play they may put one of these bags over their own heads or over the head of a playmate; the bags have been agents of suicide and are potential agents for infanticide and homicide. Polythene sheeting is also dangerous as a covering of prams, cots, or cot mattresses.

The National Federation of Dry Cleaners adopted the printing of a warning notice under a red triangle, and some of the larger bags are also perforated.

In the past, rubber sheeting was used by those who indulged in auto-erotic practices. This may still occur but its scarcity and ready access to polythene sheeting and bags has provided an alternative agent.

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\* We would like this article to be regarded as our tribute to Professor Berthold Mueller's 75. birthday in January 1973.

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## The Circumstances of Suffocation with Plastic Agents

### *1. Accidental Suffocation*

The majority of these victims are children and the circumstances are illustrated by the following case; an illegitimate infant girl, aged 17 months, was dead when found on her back in the floor of her attic home. She was fully clothed and had a plastic bag over her head. There were signs of asphyxia but none of injury. Petechial haemorrhages were present in the skin of her forehead, eye lids and left temple but there were none beneath the conjunctivae; her lips were cyanosed; she also had petechial haemorrhages beneath the pleurae. No natural disease nor congenital malformation was present. Death was due to asphyxia. The mother came under strong suspicion but this accident occurred when she had left the child alone for several hours.

The bag was normally kept in a drawer near the child's body and the drawer was partly opened. It was at a level of 28 inches above the floor and the child measured 28 inches from the soles of her feet to the level of her eyes. It was possible therefore for her to have taken the bag from the drawer.

The bag had been made from polythene sheeting by tying it with 4 knots, 3 of which formed a handle. The aperture in the bag was 17 inches in circumference; it may have been a little smaller when first made. It was possible for the child to have pulled the bag over her head, although not without difficulty.

A consideration of the circumstances led to the conclusion that the child was alone responsible for the accident; the mother was exonerated (F. M. 15935).

A boy of 3 years also died of asphyxia due to putting a plastic bag over his head. The child was perfectly normal but the mother had a long history of mental disturbance and was living apart from her husband. She told the police that she left the child in the house while she went shopping and called at a fish and chip shop on the way home. When she got home she found the child with a plastic bread wrapper over its head. There appeared to be some doubt about the times which she gave in her story being correct but she was very distressed and mentally disturbed when making the statement and there was no indication that she had done anything to the child.

There were no petechial haemorrhages in the eyelids, or the skin of the face, but a few fresh petechial haemorrhages were seen beneath the epicardium at the back of the heart, and there were a few more beneath the pleura. There was no evidence of injury of the kind seen in the „battered baby". The only other finding of note was the presence of a little regurgitated stomach contents and foamy mucus in the air passages. There was only incomplete obstruction of the main air passages but the bronchi within the lungs were filled with stomach contents. The tiny scratches and bruises on the child's face were consistent with injury caused by the hurried removal of the plastic bag and attempts to resuscitate the child.

### *2. Auto-erotic (and Narcotic) Misadventures*

Plastic bags have been used in the course of auto-erotic practices for at least a decade and although the majority of reports have been in the Continental journals, notably German journals, we in England have not been unaware of this

practice. Plastic bags have also been used as an aid to intoxication by addicts to the inhalation of anaesthetics or narcotic vapours.

It is now widely accepted that the induction of partial anoxia, as by hanging, the most favoured mode, or other forms of mechanical asphyxia, accentuates sexual sensation during an auto-erotic exercise.

The mode of stimulation employed in auto-erotic practices was analysed by Schollmeyer (1966) and amongst 119 reported cases he found that 62 were by strangulation; 22 by electrocution, 20 by asphyxia (*reine asphyxie*), and 15 by narcotic poisoning. We respectfully disagree with his term "strangulation", since the arrangement of the ligature in many, if not all, of these cases is such that the weight of the body or part of the body operated on the ligature and, therefore, these deaths were by hanging.

We formerly thought that the age range for auto-erotic accidents was between the ages of about 17—25 and 55—65 but it is now clear that the range is much wider, i.e. 11 to 80, and it may prove to be even wider still. One of our subjects, who was deemed to have died as a result of an experiment, but in circumstances which could have been those of an auto-erotic exercise, was aged 11 $\frac{3}{4}$  years (F. M. 6041; Polson 1965).

An alternative explanation for the use of plastic bags was offered by Johnstone *et al.* (1960), who deemed it preferable to the less elegant and more superficial theory of partial anoxia. They suggested that enclosure represented an attempt to return to the womb. It might have been the motive of the man who was found dead, doubled up, inside a dustbin. We still prefer to believe that partial anoxia is the aim in the majority of these auto-erotic practices.

It is still true that all of the victims are males. No example or report of an example of a female dead in these circumstances is yet known to us.

### *Illustrative Cases*

The earlier cases were reports of enclosure of the head in rubber sheeting, a sponge bag, or a diver's mask.

Rosselet (1927) reported the death of a young man aged 26 who had wrapped his head in layers of thick rubber sheeting which he had fixed firmly round his neck with string. His room was locked on the inside. There were no signs of a struggle. It was believed to have been suicide but we note that he was known to have exhibited signs of sexual abnormality and he was accustomed to carry rubber articles in his pocket and had a habit of touching rubber. This death could well have been the result of an auto-erotic exercise.

A man aged 41, when found dead in bed was wearing a rubber swimming cap and his mouth and nose were obstructed by a rubber lined sponge bag. His watch was nearby. The theory offered at the inquest was that he had been making an experiment. He had heard in India that it was possible to remain under water for long periods. He was believed to have been engaged in a test to see how long he could hold his breath, as if under water.

Another case concerned a man aged 25. When found dead in his bath, he was wearing a frogman's outfit; the clips were clamped to his nose. The body lay in only one foot of water. Death was ascribed to oxygen want; there was no evidence of drowning. Here also it was suggested that this accident was the result

of an experiment. He was interested in under-water photography and he might have been engaged in tests to enable him to construct an under-water camera. His oxygen canister had been in use for some time. This was the second case of its kind within 4 months; the earlier victim, aged 27, was a neighbour of the deceased.

A boy aged 16 years and 10 months was found lying naked on the floor, near his bed. There was a plastic bag over his head, secured by a band. A second plastic bag enclosed his genitalia and it appeared ejaculation had recently occurred. His feet and legs were tied together and a second ligature was tied to one thumb as if he had also intended to tie his hands together. Death was due to asphyxia. (A report of this case was given to us by Mr. G. F. Goodman, Chief Constable of Halifax.)

A boy, or should we say today, a man, aged 16, when found dead in his kitchen had his head enveloped in a plastic mackintosh which he had fastened round his head with an elastic cord. On this occasion the explanation was that death was the result of an experiment. He was an assistant to a monumental mason and, aware of the danger of inhaling stone dust, he was believed to have been attempting to devise a dust mask (*Manchester Guardian*, April 4th, 1950).

There are already a number of excellent and well illustrated reports of these accidents with plastic bags, e.g. Holzhausen and Hunger (1960). Johnstone *et al.* (1960), Dumont *et al.* (1962), Weimann (1962), Weimann and Prokop (1963), Schollmeyer (1966), and others. The following case in our practice occurred in circumstances as bizarre as any other yet reported:

*Case 1.* This man, aged 22, died in a hay loft, at his workplace, to which he had gained access by a ladder. He had placed a couple of blankets on the hay and his body was laid on them. It was encased in three large, thick plastic bags; one was over his head and loosely fastened round the neck with twine, a second encased his trunk and he had cut two armholes in the bag, through which his arms protruded. The third bag enclosed his legs and was fastened at the ankles and knees with twine. When the bags were removed it was seen (Fig. 1) that he had a large pad of cloth in front of his face; there was a strong odour of ether. He had encircled his body with several loops of twine and protected his shoulders with a large piece of cloth. Neither the neck nor the genitalia were included in these loops. The legs were enclosed in two large rubber inner tubes. The innermost was cut to the shape of an inverted U, the top of the U cut off, with the legs thrust down within each side of the tube, and with a flap fashioned from the upper part with a hole in it through which his genitalia were thrust. On top of this was a second inner tube, in the shape of a U, the legs thrust into the limbs of this tube.

There was a metal ring round his penis, a short length of chain was attached to each side of the ring, and the chains were fastened to twine which encircled his body. He had applied a metal clamp to his scrotum, above the testicles; the clamp was firmly bolted on the right side but the bolt on the left could be unscrewed with the fingers; the clamp had not exerted severe pressure on the scrotum; he had also fastened the clamp to his body with twine (Fig. 2).

An aerosol, labelled "Quick Start", a ring spanner and a handyman's knife were beside the body. His clothing was in a neat pile about 15 feet from the body. There was a pile of unused plastic bags in the loft and fragments of plastic, which he had cut from one of the bags on his body, were also found.

Death was due to the combined effects of asphyxia and the inhalation of narcotic vapour. There were no signs of injury and the freedom of his arms had enabled him to accomplish this fantastic situation. He had a few petechial haemorrhages beneath the inner surfaces of his eye lids and at the back of his heart. There was an odour of ether in his brain.

Analysis of the aerosol showed that it contained ether and toluene; these substances were present in his blood, brain and lungs (F. M. 15828A).



Fig. 1

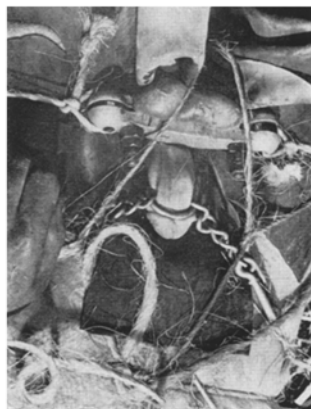


Fig. 2

Fig. 1. View of back of body showing complex arrangement of cord (twine) and rubber tubing on the legs

Fig. 2. Detail of the genital enclosure with a ring and metal clamp. Also rubber tubing on the legs. Pad of cloth near face

*Case 2 Narcotic (Ether) Addiction.* This man, aged 27, was found in a state of advanced putrefaction but it was possible not only to establish his identity but also the circumstances of his death. He had a plastic bag over his head and had knotted the bag on the left side of his neck. A handkerchief was inside the bag, close to his chin. There was a bottle of dimethyl ether beside his bed. Dissection showed that the bag had been drawn into his mouth and naso-pharynx so as to effect complete closure of the airway; its apex reached the epiglottis. There was no evidence of sexual deviation; no signs of injury; no motive for suicide.

Analysis detected 1670 ppm. of ether in the brain and 88 ppm. in the liver; the alcohol level in the brain was 172 mg% and in the liver 130 mg% (F.M. 11 661A).

*Case 3 Chloral Narcosis and Plastic Bag Suffocation.* This woman of 40 was found dead, face down, with a plastic bag over her face. There were no signs of asphyxia; no signs of injury and no motive for suicide.

An 8-ounce bottle near her still contained a small quantity of fluid which was identified as chloral B. P., in a strength of 1.5 grains per ounce; the full bottle would have contained 12 grains of chloral (780 mg). Post-mortem changes destroy chloral and analyses are only approximate and are probably under-estimates. The results showed that there were 600 mg (10 grains) of chloral in her stomach; 4 mg% in the blood; 5 mg% in the liver and 25 mg% in the urine. She had clearly taken a considerable amount but one which was below the average lethal dose, i.e. 10 g. She had taken enough to produce unconsciousness. The final factor was suffocation by the plastic bag.

#### *Suicidal Suffocation with a Plastic Bag*

This may be accomplished by use of the bag alone, or in combination with inhalation of carbon monoxide or other gas, as in the case of Tolnay (1963). Some are under the influence of alcohol.

Our practice has included the following cases:

A man aged 56 was found dead on the bank of a river. He had a plastic bag over his head and his death was due to asphyxia. His blood contained 209 mg% and his urine contained 255 mg% of alcohol.

A man aged 71, who died of asphyxia by a plastic bag, was under the influence of amylal. It was estimated that about 14 grains (900 mg) were circulating in his blood at the time of his death. His blood contained also 68 mg% of alcohol (F. M. 13376).

Conversely, the death was due to asphyxia alone, in a woman, aged 41, who put a plastic bag over her head. The bag acted as a valve-like seal over her nose and mouth.

The first case in our practice occurred in 1961, when a male aged 22 died of asphyxia by putting a plastic bag over his head (F. M. 7801C).

#### *Homicidal Suffocation with a Plastic Bag*

As yet, we have had no instance of this form of homicide, nor does any appear to have been recorded. The following is an instance of attempted infanticide with a plastic bag.

An infant girl, when aged 5 days, had a plastic bag applied to her head by her mother, who, at the time, was suffering from puerperal insanity. A police officer was summoned and he promptly removed the bag and successfully resuscitated the child. Unfortunately, owing to prolonged cerebral anoxia, there was permanent, grave cerebral damage. She suffered from quadraplegia; she could move her head and swallow. She had retained some mental faculty. Her intelligence quotient, measurable by special tests, was about 60, but because of her physical disabilities she was ineducable. The child was examined in 1970 at the age of 6 years and is still in the care of a national institution.

(By courtesy of Dr. Mary Polson, School Medical Officer, and Mr. D. Pickles, educational Psychologist, W.R.C.C.)

#### *Asphyxia by the Amniotic Sac*

Asphyxia by the amniotic sac is a well-recognised complication of child birth, but it is uncommon. To be "born in a caul" is, understandably, a lucky event if the child survives; there was a time when an amniotic sac from one of these cases would be bought as a charm against misfortune. A good example of asphyxia by a sac is depicted by Polson (1965).

#### *The Signs of Suffocation by Plastic Bags*

These deaths occur in circumstances which are usually obvious and the majority present the signs of asphyxia; there are no external signs of injury. There may or may not be evidence of disease, which contributed to the death or predisposed to suicide. It is more important to bear in mind that there may be the coincident effects of alcohol or drugs and therefore the examination of the body should include a toxicological analysis. In some cases there is evidence of sexual deviation.

The presence of moisture inside the bag may mislead. It could be evidence of breathing inside the bag but it is more probable that this is due to condensation of moisture, dispelled from the body after death. Organs conveyed to the laboratory in plastic bags frequently "breathe" and a cushion, enclosed in a plastic bag also "breathed", when exposed to the warmth of the sun.

When an old man was found dead with a plastic bag over his head, tied round his neck with a necktie, moisture was abundant on the inner surface of the bag. The first pathologist, having found severe coronary disease, ascribed the death, to heart failure, i.e. natural cause; he discounted the bag as a factor in the death because he believed the deceased had breathed while it was over his head. The

learned coroner was sceptical and sought a second opinion. There was evidence that the man had taken steps to prepare for death; he had given directions for the disposal of his deed box. A verdict of suicide was returned (Polson, 1965).

Some of the victims show no signs of asphyxia; 3 examples were reported by Hunt and Camps (1962); they were absent in 2 of our cases. The correct explanation of this difference from other cases of suffocation has yet to be ascertained. It is possible that the first inspiration may draw the bag into the back of the throat, as found in F. M. 11 661 A, and causes abrupt respiratory and cardiac arrest. On other occasions it may be that almost as soon as the bag is over the head the first inspiration sucks in the bag as an immediate, complete seal over the nose and mouth and this causes sudden cardiac arrest.

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Emeritus Prof. Dr. med. C. J. Polson  
Dr. D. J. Gee  
Department of Forensic Medicine  
University of Leeds  
30 Hyde Terrace, Leeds. LS 29 LN  
Yorkshire, G.B.  
Great Britain