

# KETALAR

## Its use by a single operator.

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### SUMMARY

Ketalar (Ketamine Hydrochloride) was used as the sole anaesthetic agent by a single operator in fifty cases of uterine evacuation. The procedure was easy in use, and safe. It was noted that Ketalar caused a significant increase in tone of the uterine musculature, obviating the need for oxytocic drugs. The incidence of emergence phenomena was low. The patients, and staff were well pleased with the outcome.

### MATERIALS AND METHODS

Fifty patients were chosen at random. A diagnosis of retained products of conception requiring uterine evacuation was made in each case.

Prior to anaesthesia each patient had their pulse, blood pressure, respiration rate and temperature checked. A mask was placed over the patients' eyes and positive, gentle reassurance given. Each patient was placed in the lithotomy position. As ketalar may cause excessive salivation, Atropine 0.6mgms. was given intravenously as an anti-sialogogue. The Atropine was given mixed with the ketalar solution. Ketalar was used in the recommended dose of 2mgms./Kg. body weight. The dose of ketalar given was sufficient in the majority of cases. In 6 patients who weighed in excess of 60Kgs., the recommended dose appeared inadequate and a small incremental dose was necessary in each case. The onset of the drug was approximately 30 seconds. The pulse, blood pressure, temperature, and respiratory rate of each patient were checked during the surgical procedure ten minutes post procedure, and again in 30 minutes. A rise in pulse and blood pressure was common to all patients. There was no increase in temperature or respiratory rate.

Hypertonicity, respiratory depression, excessive salivation or airways obstruction, did not occur in any case. An oral airway was not used and the patients only breathed air. The depth of anaesthesia was very adequate for the procedure involved. It was remarkable that blood loss was minimal and no oxytocics were required at all.

The duration of action varied between five and 10 minutes. Post-operative restlessness was noted in 5 cases. Fifteen patients experienced pleasant dreams,

while 10 had unpleasant dreams. No additional drugs were necessary post-operatively.

### INTRODUCTION

The University Teaching Hospital deals with a large number of incomplete abortions. These patients are admitted to the emergency gynaecological admission unit. Uterine evacuations are performed twice daily in a theatre block distant from the admission unit.

Recently, one room in the admission unit was outfitted with a gynaecological examination couch, oxygen, suction, ambu bag, laryngoscope, endotracheal tubes, some emergency drugs, and equipment necessary for uterine evacuation. It was decided to run a trial in the unit to see if uterine evacuation by junior medical staff could be performed there with safety. As there are no anaesthetic facilities in the area, it was decided to perform the uterine evacuation under the effect of an analgesic, or short acting anaesthetic drug, this drug to be administered by the operator.

To be acceptable, such a drug should be simple, safe, effective, and economic (Board and Henry 1974), and should have a fast onset, and short action of duration. It was felt that Ketalar (Chen 1965) (McCarthy et al 1965), would suit these conditions admirably.

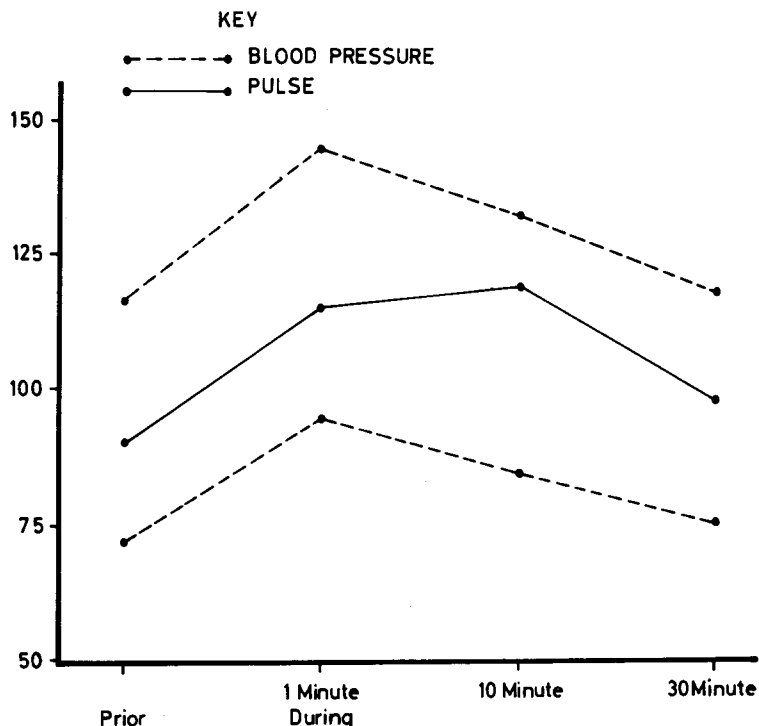
The operator invited a member of the Anaesthetic Staff (Dr. Sil) to discuss the project and act as an observer.

One case of post-operative vomiting was noted. This patient later stated she had drunk mineral water a short time prior to anaesthesia.

The general impression of medical and nursing staff was that the recovery interval following ketalar was shorter than in patients undergoing conventional general anaesthesia. The patients were all fit for discharge within four hours of the procedure.

Figure one illustrates the pulse and blood pressure changes following intravenous administration of ketalar. The mean rise in systolic blood pressure was 32 millimetres of mercury (Range 10–60mm. Hg.), while the mean rise in a diastolic pressure was 23mm. Hg. (Range 0–60mm. Hg.). The average rise in pulse

**FIG. I**  
**PULSE AND BLOOD PRESSURE CHANGES FOLLOWING**  
**INTRAVENOUS ADMINISTRATION OF KETALAR**



rate was by 30 beats per minute (Range 2–60 b.p.m.).

Figure two illustrates details of patients in the trial. A lower age group, higher parity and shorter duration of pregnancy would have been expected, but this did not prove to be the case.

**FIG. II**  
**DETAILS OF PATIENTS IN THE TRIAL**

	Mean	Range
Age	24	14–45 years
Parity	2	0– 9
Weight	54 Kgs.	41–85 Kgs.
Gestational Age	14.4 weeks	6–26 Weeks.

Previous Abortions – In Nine Patients Only.

**DISCUSSION**

Ketalar is a rapid acting, non-barbiturate, parenteral general anaesthetic. It induces a state of dissociative anaesthesia, which is characterized by catalepsy, light sedation, amnesia and marked analgesia (Dundee and Wyant 1974).

Many authors have remarked on the fact that ketalar may solve some of the staffing problems in developing countries (Downing 1972), (Spoerel 1970), etc. Phillips et al (1970), recommended ketalar for the use by the lone surgeon. The only reported use of ketalar by a single operator comes from Walker (1972) in the Solomon Islands.

Chordoff and Stella (1966), were the first workers to use the drug in obstetric practice and noted that it increased the uterine tone. Moore et al (1971) commented on that same property. Jawalekar et al (1972), reported on the effects of Ketalar on isolated murine myometrial activity, and found that the drug stimulated the resting tension, and the amplitude, and frequency of contractions. An increase in circulating catecholamines has been noted following administration of ketalar (Bovil 1971a), (Takki et al 1972). Catecholamines acting on the adrenergic receptors in uterine muscle (Philipp et al 1970) have varying effects which depend on the presence of current or recent pregnancy (Best et al, 1968). Adrenaline relaxes the pregnant uterus while noradrenaline causes its contraction (Bell, Davidson, Scarborough 1968). The latter effect seems dominant following use of ketalar.

Nitrous oxide cyclopropane decrease uterine tone, and motility, leading to bleeding (Munson et al,

1969) as does Halothane (Zauder et al, 1970), and these agents are frequently used as anaesthetic agents during uterine evacuation. The increased uterine tone, lack of bleeding, and lack of dependence on oxytocic drugs, in the series is probably a result of both the use of ketal and avoidance of uterine relaxing drugs.

The occurrence of emergency delirium has been noted by Domino et al (1965), Casale and Sil (1971), and others. However, positive gentle reassurance prior to induction reduces the problem (Galbert 1973) as does masking the eyes, during anaesthesia (Helja and Galloon 1975). Petz et al (1973), thought that emergence phenomena did not significantly differ from those observed following use of thiopental.

Some degree of cardiovascular stimulation almost invariably occurs with Ketalar, affecting both the heart rate and blood pressure.

Large doses of atropine (1.0 mgm/Kg.) may diminish the chronotropic effects (Traber 1970b) and prior administration of 5 mgms. of droperidol intravenously reduces the hypertensive effect to some extent (Boville and Dundee 1972).

Contraindications to the drug in obstetric practice include pre-eclampsia and eclampsia, version, and early pregnancy, as teratogenicity, although not reported, has not been excluded. Ketalar can be administered easily by a single operator, or by nursing and paramedical staff in the presence of the operator. It is mandatory that the person in charge be capable of intubating a patient and assisting respiration in the unlikely event of this being necessary. We encountered no problems during the trial and would recommend ketalar for use by a single operator.

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