THE USE OF HAEMODIALYSIS TO SUPPLEMENT THE CALORIC INTAKE OF TRAUMATICALLY INJURED ANURIC PATIENTS

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Since, for various reasons, it is frequently difficult, or impossible, to provide severely injured patients with the large number of calories they may require each day, the use of haemodialysis with high concentrations of glucose in the dialysate is worthy of consideration. With concentrations of 1400 to 1800 mg\% it is possible to provide greater than 1500 calories in 6 hours. This storage and/or utilization of glucose may be increased to 2000 calories per 6 hours when slow infusions of insulin are added to the regime. The dialyses may be repeated every 2 or 3 days to supplement other methods of feeding. Water replacement, necessary because the osmotic effects of the technique produce dehydration, allows for additional intravenous glucose feeding.

The following is suggested as a simple and safe method.
1. Glucose (1400–1800 g) is added to the 100 litre dialysis bath of a standard Kolff twin coil apparatus.
2. Thirty to forty units of insulin per hour are infused slowly into the tubing returning blood from the machine to the patient. The insulin infusion is discontinued one hour before the planned completion of the dialysis.
3. All extra weight losses are replaced with intravenous infusion of 10\% dextrose and water.

The data below illustrate the minimal caloric uptake provided by a single 6-hour dialysis when baths of varying glucose concentrations are used.

![Graph showing caloric uptake vs. bath glucose concentration](image-url)

Fig. 1.

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Glucose/100 litres of dialysate

<table>
<thead>
<tr>
<th>Glucose (g)</th>
<th>Caloric Uptake (Calories)</th>
</tr>
</thead>
<tbody>
<tr>
<td>580</td>
<td>586</td>
</tr>
<tr>
<td>980</td>
<td>1258</td>
</tr>
<tr>
<td>1380</td>
<td>1532</td>
</tr>
<tr>
<td>1780</td>
<td>1698</td>
</tr>
<tr>
<td>1780 g glucose plus</td>
<td>2078 Calories</td>
</tr>
<tr>
<td>40 units insulin/hour.</td>
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</tbody>
</table>

**Fig. 2.**

1380 Gram Glucose Bath with Insulin Infusion

<table>
<thead>
<tr>
<th>Glucose concentration (mg/dl)</th>
</tr>
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<tbody>
<tr>
<td>1800</td>
</tr>
<tr>
<td>1500</td>
</tr>
<tr>
<td>1200</td>
</tr>
<tr>
<td>900</td>
</tr>
<tr>
<td>600</td>
</tr>
<tr>
<td>300</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

Rate of Blood Flow: 250 cc/min.
Rate of Insulin Infusion: 40 units/hour

**Fig. 3.**

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**Fig. 4.**

**1800 Gram Glucose Bath**

- Dialysis bath
- Venous blood
- Arterial blood

**Fig. 5.**

**1760 Gram Glucose Bath**

- Dialysis bath
- Venous bath
- Rate of blood flow: ~250 cc/min.
- Arterial blood

Pre-dialysis (Minutes) | Dialysis (Hours) | Post-dialysis (Hours)
--- | --- | ---
20 | 60 | 7
2 | 3 | 3
4 | 5 | 24
6

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980 GRAM GLUCOSE BATH

Glucose Concentration (mg%)

Dialysis bath
Venous blood
Arterial blood

Rate of Blood Flow 260 cc/min.

[Graph showing glucose concentration over time for dialysis bath, venous blood, and arterial blood with time intervals in minutes and hours.]

Fig. 6.

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